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WORKING CONDITIONS FOR FEMALE EMPLOYEES

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The shift from peacetime to war production has increased the call for women, many whom have never worked before and others who have been engaged only in service, trade or other nonfactory jobs.

Considering the entire labor force of the United States, the employment of women has been increasing at a faster rate than that of men.¹ In March 1943 the number of women working outside their homes reached an all time peak of 15,200,000. Total male employment declined between March 1942 and March 1943 by 5 per cent, but employment of women went up 14 per cent.

In some key industries, such as aircraft, the number of women has risen from nearly zero to hundreds of thousands. In aircraft women total more than a third of the workers, in some individual plants more than half. In communications equipment 58 per cent of the workers are women, in scientific instruments 43 per cent, in ammunition plants 40 per cent, in electrical equipment 38.5 per cent and on down in varying smaller proportions in more than thirty separate important industrial categories.

Industrial management has approached the employment of women with not a little uneasiness. It is true that women have been employed for years on many light manufacturing operations, and they have excelled men in many jobs requiring patience and precision. But in those industries in which the employment of women has not been customary the change has involved a complete revision of many personnel and employment policies as well as extensive plant alterations.

The effective employment of women in industry depends in a large measure on thorough planning. This must be done well in advance of the employment of the first female production worker, for it is only through detailed planning that any program can be effectively initiated and maintained. Attention must be paid therefore to certain fundamental factors which serve as a guide for the utilization of these women on the production line in our war industries.

There are certain jobs and working conditions not suitable for women, but these are chiefly due to certain limitations of physique, biologic differences and experience.

It seems quite obvious that most of the precautions for health and safety recommended for women are equally desirable for men. Basically, poor working conditions and environments have no sex differential.

Nevertheless the employment of women calls for certain refinements of procedure that seem less important for men.

It may be said that any production program, whether in wartime or peacetime, can be attained and maintained over an extended period of time only when working conditions and unhealthful environments leading to fatigue, discomfort, ill health or accidents are eliminated as far as practicable.

In order to make the entry of women in factories as easy and successful as possible, recognition and consideration must be given to certain factors and requirements for their safe, healthful and efficient employment.

WOMEN AND MACHINES²

On the average, women are shorter, lighter in weight and not as strong as men. This statement is trite, and it seems needless to repeat it. However, it should be kept constantly in mind when reviewing any job where consideration has to be given to replacing men with women workers.

In most cases machines have been designed and fixtures developed for the reach, strength and stature of male operators. Most assembly jobs have been developed and time and motion studied with the reach, strength and stature of male workers as factors. Now female employees make it necessary to change machine design. Therefore the complete cycle of motions necessary to operate a machine or do a certain job should be studied so that the same amount of work may be done by women without an increase in personal fatigue.

This transition from men to women workers does not involve a complete redesign of machines, tools and equipment. It does, however, require a careful study of each individual job—preferably by a qualified time and motion study man or a combination of foreman, time and motion study man, and safety engineer and industrial physician—in order that all the elements may be given careful consideration.

In making such a study, the following changes should be considered:

1. Extension of levers on machines, tools and equipment in order to produce the same results with less effort.
2. Use of lighter weight and longer wrenches to reduce the strain on the operator.
3. Suspension and counterbalancing of heavy hand tools where substitution of lighter tools is not practical.
4. Lowering of work table, or raising of floor level, to compensate for the difference in the height of men and women operators.
5. Readjustment of machine guards because women's hands are smaller than men's.
6. Positioning of material so that it will:
 - (a) Reduce the number of body motions.
 - (b) Eliminate need for lifting heavy objects.
 - (c) Eliminate need for long reaching.

This paper, in a symposium on "Health of Women in Industry," is published under the auspices of the Section on Obstetrics and Gynecology.
1. Employment of Women in Wartime, Monthly Labor Review, September 1942, pp. 441-443.

2. Westinghouse Electric & Manufacturing Company, Medical Department, East Pittsburgh, Pa., 1943.

SELECTION AND TRAINING

Experience has shown that the wholesale employment of women without some caution in selection will result in high labor turnover and absenteeism. Generally speaking, the selection and training of women is often more difficult and presents greater problems than those in the employment of men. Employment tests and procedures used in the past for the employment of men are not totally suitable for the employment of women. They must be altered to fit certain considerations. It is important as a first step in any selection procedure to know the type of work for which women are needed.³ Heavy or highly skilled work should be broken down into intermediate jobs wherever practicable. Jobs should be classified as to skill needed, health and safety hazards and physical strength required, so that personnel and medical directors may be in a better position to place the right type of woman employee in the proper job.

Women as a general rule, while lacking in mechanical experience, do not lack mechanical ability. Mechanical ability can be brought out only after proper training and experience. Initial training courses must be extremely elementary. Many women are entering factories for the first time and therefore will not be familiar with the common shop terms and tools. After careful training they can then be given more effective job training for their specific tasks.

What are the jobs in which women can be employed? This is a question, because women are daily going into jobs that never were previously performed by women. The only leading limitation appears to be the degree of physical effort required and possibly women's greater susceptibility to certain poisons such as benzene and lead. However, these factors can be controlled by early and adequate planning, such as the division and subdivision of jobs into several phases, by the use of mechanical lifting devices for reducing and eliminating physical effort and by adequate engineering and medical control for preventing and detecting occupational environmental exposures.

PROHIBITED EMPLOYMENT

Only a limited number of industrial employments are prohibited for women by legislation. Most of these prohibited employments are concentrated in the laws of a few states and many are prohibited or regulated in not more than one state.⁴ Many of the states have only a single prohibition or regulation. In twenty-two states and the District of Columbia there are no laws regarding the employment of women in any specific occupation. Federal legislation concerning the employment of women in manufacturing industries is chiefly contained in the Fair Labor Standards Act and the Walsh-Healy Public Contracts Act. All the federal and state laws should be studied carefully before placement and periodically thereafter for changes.

NIGHT WORK

It can be stated that night work is not beneficial to any one regardless of sex. The human mechanism is designed for and experienced in working by day and sleeping at night. Women appear to be more affected by night work than are men. Most employed women have responsibilities outside their hours at the

place of business, and, whether married or single, they bear some share in the care of the home. Outside of great emergency and absolute industrial necessity, night work for women should be restricted.⁵ Furthermore, make sure that the individual is able to work the night shift. No employee should be accepted if there is a history of anemia, digestive or respiratory disease or nervous disorder.

HOURS OF WORK AND FATIGUE

Experience gained during the last war is conclusive that long hours and fatigue impede production. The person handicapped by the physical poisons produced by fatigue cannot work so rapidly or so effectively as can the person who has sufficient time for rest and recreation. The matter of hours of work and fatigue is most important in connection with the utilization of woman labor. It can well be said that the success or failure of the movement depends to a great extent on what we do with reference to these things. The disabilities to which women are liable are readily caused or accentuated by irregular hours and habits. These conditions may become chronic and render the subject unable to continue her work or prejudice her future health. Fatiguing occupations and environments slow up the worker, increase the danger of accidents, induce various forms of nervous disorders and lower the resistance of the worker. If it is at all possible there should be transference of workers on monotonous processes to avoid fatigue. While there has been a striking trend toward the shortening of working hours and the lessening of fatiguing factors, under emergency powers those benefits and standards slowly achieved are often interrupted. In many states, to meet the war production demands, the need for longer hours is met by issuing emergency permits after a careful investigation that such a need exists.⁶ These have a limited time and are revocable.

Women are prohibited from working more than forty-eight hours per week in American industry. It seems that American management has felt that there is no need for longer hours and that above forty-eight hours neither the worker nor the management is benefited. The U. S. Women's Bureau has prepared recommendations in regard to the working time of women.

SEATING

Women should be seated at their work whenever practicable. However, neither continuous sitting nor standing is recommended, as both will produce fatigue. The work should be so laid out that the worker can perform her job either sitting or standing in order to allow some change in her working position from time to time. If practical, on highly repetitive and monotonous jobs the work should be so arranged that the operators must go after their work rather than have it brought to them. The seats should be of the posture type suitable for the type and nature of the work to be performed. Makeshift seat arrangements should be discouraged.

WEIGHT LIFTING

It has been recognized since women first worked that they should not be allowed to lift heavy loads or do work requiring great physical exertion if they are

3. Women's Role in War Production, Bulletin 4, U. S. Department of Labor, Women's Bureau, April 1942, vol. 9, No. 4.

4. State Labor Laws for Women, Bulletin 156, U. S. Department of Labor, Women's Bureau, 1938, pt. 1, summary.

5. Night Work for Women and Shift Rotation in War Plants, Special Bulletin 6, U. S. Department of Labor, Women's Bureau, June 1940.

6. Labor Standards for Women on War Work: The Woman Worker, U. S. Department of Labor, May 1942.

to be efficiently employed. There is a great variance of opinion relative to the safe maximum lifting load for women. State regulations are meager on this subject and in addition show great variance. In England it has been reported that women are allowed to lift a load equivalent to one-third their own weight.

The conditions under which the lifting is to be done must be known before any safe limit can be set. The chief factors to consider are:

- (a) The ratio of load to body weight.
- (b) The number of loads lifted.
- (c) The size and shape of the load.
- (d) Distance load is to be carried.
- (e) Period of sustaining lifting.
- (f) The levels of lifting.
- (g) Degree of rotation of the body.
- (h) Changes of level during carrying.
- (i) Method of lifting.
- (j) Physical condition and size of the woman.

The U. S. Women's Bureau⁷ has recommended that lifting loads be limited to 35 per cent of the body weight, however, this load appears to be excessive for a 90 to 100 pound girl. The best procedure to follow would be to prevent lifting wherever practical and to limit it to a minimum wherever it is necessary.

The safest method to employ regarding lifting would be as follows:

1. The plant physician should be made responsible for assigning any woman to a lifting job in excess of 25 pounds.

2. Every job requiring lifting should be carefully analyzed to provide and develop mechanical lifting and conveying measures such as hoists, cranes and tiering trucks. When lifting is necessary the work should be arranged so that the worker does not have to stack above her height.

3. Where lifting must be performed, the women should be properly instructed in lifting methods to avoid strain. For example, to avoid undue abdominal strain the feet should be kept close to the object and a narrow stance should be employed in which the feet are from 8 to 12 inches apart. A good procedure to follow is to bend the knees, keep the shoulders back and lift mainly with the leg muscles and not the back. Many back injuries are caused by lifting with the back.

4. Teach workers the safe and best way to carry weights. There are generally four methods for carrying loads. These are shoulder carriage, tray carriage, side carriage and hip carriage. This frees the lower limbs and does not result in fixation of the chest. This is particularly advantageous for the heavier loads that must be carried the longer distances.

Tray carriage (carrying in front) is at times best employed when carrying loads for short distances. However, fatigue of the arms and wrists is pronounced if this method is employed continuously.

Side carriage, that is carrying bundles at the sides, has the advantage of not disturbing body balance and not interfering with freedom of locomotion. However, the hands and arms also become decidedly fatigued if this method is employed for long continuous periods.

Hip carriage necessitates bending the body to the side to compensate for the lateral vector of the load. This carrying method interferes with normal walking and natural breathing. It is also tiring because of the rubbing of the hip and arm fatigue.

WORK CLOTHES AND PERSONAL PROTECTIVE EQUIPMENT

The longer women are employed the more it becomes apparent that work clothes should be provided for their safe employment. This should include suitable uniforms, caps, gloves and shoes. The type of clothing

to be provided depends on the type and nature of work to be performed.⁸ However, there are certain basic requirements of work clothes, for example:

1. The women should be consulted as to the type and design which they most like, and as to whether or not the proposed design is comfortable and practical.

2. The clothing should not be loose fitting enough to be caught in moving machinery.

3. The material should be attractive, durable and not readily inflammable, and it should launder easily. Bright colors have been reported as meeting with women's fancy.

4. The material should not collect dust and dirt easily.

5. Consideration should be given to the temperature of the workroom.

No wide skirts, loose sleeves, flowing ties or frills of any type should be allowed about any moving object. Slacks with tucked in blouses or coveralls have been found effective and can be made attractive. Neither slacks nor sleeves should have cuffs. Tight fitting work clothes may irritate, cause strain and result in fatigue. On the other hand, loose clothes may catch on protruding or moving equipment. Long sleeves rolled up are not desired, for the loose roll caught in a machine is more resistant to tearing when caught, and the result may be a serious injury. Outside pockets are not favored, but if necessary they can be a flat seamed or flat hip pocket.

If there is danger of fire, cotton material is preferable instead of rayon or other inflammable cellulose fabrics, for work clothes. Lightly starched fabrics are generally more fire resistant than those that have not been so treated.

Long hair is a most serious accident problem. Severe accidents have occurred about machines when hair has been caught in a moving part. Static electricity can draw hair into a moving machine despite guards. Therefore, caps with hair nets or tight fitting turbans should be worn. It is felt that a stiff hat (light of weight and fitting loosely) is preferable about moving machinery. This hat should be so designed that there is little danger of its being caught in the machine. In jobs where toxic dusts emanate, caps become of increased importance. In radium dial painting, for example, despite precautions, such as the handling of only a grain of powder at a time and mechanical ventilation, radioactive dust can be detected in the hair of dial painters with an ultraviolet lamp unless head coverings are worn.

Jewelry has no place in the factory. Many serious accidents have occurred from loose hanging jewelry. One does not need a vivid imagination to picture the horrible consequences of a necklace or bracelet being caught in a moving part of a machine. It has become a rule in many plants to prohibit the wearing of bracelets, earrings, large rings, wrist watches and all female decorative equipment.

Safety shoes are also important for the safe and efficient employment of women. Women should be required to wear low heeled, comfortable shoes. The high heel, toeless shoe should be prohibited. Not only do uncomfortable shoes cause undue fatigue, but they can also be a hazard. One of the commonest accidents among women is tripping and falling. In this source of accidents high heels, worn shoes, slippers or other improper footwear are major causative factors. In addition, open toe shoes should be prohibited. Closed

7. Lifting Heavy Weights in Defense Industries, Special Bulletin 2, U. S. Department of Labor, Women's Bureau, February 1941.

8. Safety Clothing for Women in Industry, Special Bulletin 2, U. S. Department of Labor, Women's Bureau, 1941.

toe shoes prevent injuries from stubbed toes and the entrance of small particles of metal and other materials into the toes and the danger of toe infections. Safety shoes have not entirely met with the approval of women. However, where they have been made light and attractive, acceptance has been generally found.

SANITATION AND WELFARE MEASURES

Probably no single group of measures is more indicative of management's appreciation of the health, safety and comfort of its employees than the extent and adequacy of sanitation and welfare facilities. Employees react more favorably to these measures than to any other environmental change. Particularly is this more true of women than of men.

Much of the emotional adjustment of female employees can be aided by adequate and suitable sanitation and welfare measures, and the high labor turnover, which is evident during the first part of the employment period, can be reduced by such facilities. Few manufacturing plants had adequate facilities for women prior to the present war, and therefore the major physical or structure changes in the plant will probably be in providing these facilities. The extent and type of measures normally provided for men are generally inadequate for women.

There are many sources of information to assist in planning sanitation facilities for women. State and city health departments, the U. S. Public Health Service the U. S. Women's Bureau all have excellent literature on good sanitation practice. One of the best standards to follow is the "Safety Code for Industrial Sanitation in Manufacturing Establishments" of the American Standards Association.⁹ These standards are the most authoritative and were prepared in cooperation with the U. S. Public Health Service.

In providing toilet facilities for women the following are some of the minimum essentials:

1. It is necessary to provide separate toilets for men and women.
2. The U. S. Women's Bureau recommends that toilets for women be supplied in the ratio of one for each fifteen women.
3. Toilet rooms should be provided with adequate washing facilities and should be equipped with sanitary napkins and suitable dispensers.
4. Privacy demands that each toilet unit be enclosed and have a door provided with a fastener.
5. The minimum floor space allotted for toilet facilities should be 16 square feet for each toilet.
6. The construction and maintenance of toilet fixtures should comply with the state or city building and plumbing codes.
7. In the interest of sanitation, it is important that walls and floors of toilet rooms be of material as nearly as possible non-absorbent.

WASHING FACILITIES¹⁰

Women are most particular about skin hygiene, and therefore this fact should be considered in providing wash rooms. Managements that go beyond the minimum city or state requirements will find it well worth while. Wash rooms should be equipped with soap, hand lotions, skin creams in suitable dispensing units, individual towels, cleaning tissue and waste receptacles. Mirrors should be provided over a narrow glass shelf. The room should be well painted, illuminated, ventilated and heated. Good skin hygiene is a basic requirement for the prevention of dermatitis.

The following minimum practices should be instituted:

1. Washing facilities may be of the individual bowl, trough or wash fountain type. Troughs or wash fountains have the advantages of being economical to install and economical of space.
2. At least one wash basin with adequate water supply should be provided for every ten employees or portion thereof up to one hundred persons, and one wash basin for each additional fifteen workers or portion thereof. Twenty-four inches of sink with individual faucet may be considered equal to one basin. If the women are exposed to dermatitis producers, the ratio should be one wash basin for each five workers.
3. Showers may be necessary if women are placed on jobs in which the body becomes covered with grease, dust, grime and perspiration. If these are necessary they should be installed in the ratio of one per ten workers.

REST PERIODS

The benefits of rest periods have not been fully appreciated by many manufacturing establishments despite the fact that the introduction of such periods in England showed that in the majority of cases they led to an appreciable improvement in output, in spite of the loss of working time. It was found that a five to ten minute rest in the middle of the work spell increased output by 5 to 10 per cent.

Rest periods should be provided for all women workers, particularly those engaged in monotonous and repetitive work. The time allotted for such periods is best determined by individual plant study. The general tendency is to allow ten minutes in the mid-morning and midafternoon, although in some very monotonous jobs five minutes after each hour has been provided.

Rest periods should not be made to serve for all necessary health and safety measures. They cannot in themselves offset fatigue but are only one of the several measures for its control.

LUNCH ROOMS AND LUNCH PERIODS

Eating at work tables or in workrooms is a poor habit and should be discouraged. Not only is this practice poor hygiene, but, in the handling of toxic materials, a real danger of poisoning would exist from food contamination.

A separate lunch room should be provided, and provision should be made to supply hot lunches. Every effort should be made to educate women in good nutrition. The excessive use of carbonated beverages should be discouraged. Lunch rooms should be clean, attractive and comfortable. Facilities for obtaining and eating a good lunch in comfort will reduce absenteeism and also do much in the reduction of fatigue. A good industrial lunch room is another of the factors in attracting women to a plant and in maintaining a low labor turnover.

As important as a good lunch room is the provision of an adequate lunch period. The U. S. Women's Bureau¹¹ states briefly in regard to lunch period:

A lunch period is too short if it does not give the worker time to leave the workroom, wash and eat a well balanced lunch and have a few minutes for leisure afterward.

Workers handling harmful substances or exposed to harmful fumes or dusts should be given extra time before lunch for thorough washing. In some cases time for changing work clothes may be necessary to prevent serious cases of poisoning.

9. American Standards Association, 29 West 39th Street, New York.
10. Washing and Toilet Facilities for Women in Industry, Special Bulletin 4, U. S. Department of Labor, Women's Bureau, April 1942.

11. Women's Effective War Work Requires Time for Meals and Rest, Special Bulletin 5, U. S. Department of Labor, Women's Bureau, May 1942.

If the lunch room is inadequate to serve the expanding force with dispatch, or if it is distant from the workroom, additional time should be allowed, or provision made for carts with hot food to serve lunches at convenient points.

TRANSPORTATION

Transportation is also a matter of concern. Particularly is this problem important on the late afternoon and night shifts. Many women are afraid to leave or come to work at about midnight. In the case of young girls, parents may even prohibit them from work at this hour because of danger of molestation. Problems will likewise arise among those reporting for work at 7 a. m. or earlier.

No one solution can fit all transportation problems. Each is dependent on several factors, such as location of plant, type of transportation systems available and their schedules, and home location of employees. Some of the methods by which plants have met, or at least partially met, their transportation difficulties are:

1. Concentrated hiring from certain areas with special bus service to those areas.
2. Special bus service to and from main transportation terminals.
3. Employment on night and late afternoon shifts of those women with best transportation facilities.
4. Establishment of group riding.

HOUSING

As more and more women enter industry and particularly in large plants in rural areas, the housing problem will become acute.¹² It may be necessary in some areas to construct special dormitories for women. In any case the plant personnel departments should assist employees in securing satisfactory housing arrangements by securing a list of available rooms or apartments. In addition they should work with community agencies for housing and should stimulate plant executives to work with community officials in securing housing assistance from federal agencies.

Two of the first measures to meet the housing problems are to secure as much of the new personnel from present employee-families and to request present workers to provide housing for as many new workers as possible. Housing that is secured should be suitable and comfortable, for poor housing may develop many additional problems. All types of housing for women war workers should conform to standards essential for safety, security, health, decency, adequacy, privacy, cleanliness and comfort. Living quarters should be conveniently located in regard to workplaces and recreation facilities and be in pleasant surroundings.

NONOCCUPATION ILLNESS FACTORS

Illnesses of nonoccupational origin is by far the major type of sickness among any group of workers, and, in the case of women, this fact is even more striking.¹³ If efficient and continued production is to be obtained from women, it is these so-called nonoccupational diseases that must be vigorously attacked. It is in the control of these diseases that management will obtain the greatest economic benefits from its industrial health program. Therefore in the interest

of both management and labor, health programs must transcend occupational disease control and include a broad program of general health maintenance.

Present experience in England presents a warning to public and industrial health workers that must not be overlooked. This is the present sharp increase in tuberculosis, which has been especially large among women in general and particularly among young women. The cause for this increase in the tuberculosis rate is the most difficult health problem today confronting the health authorities in England. It is felt that overcrowding with increased contact, nutrition, worry and many other factors are all contributory, but as yet the one chief factor has defied recognition, as well as the reason for the predominance among young women. While it is not felt that the problems will approach the severity of those in England, we must nevertheless recognize all potential problems and guard against them.

There are certain factors and special physiologic conditions in the production of general illness among women which are of great importance in their efficient and healthful employment. These factors of general illness make the problem of good health maintenance greater in the case of women than in the case of men.

OCCUPATIONAL ILLNESS FACTORS

The true extent to which sex differences apply to occupational illness per se is not clear. Lead and benzene do appear to exert a greater influence on women, and women apparently are more susceptible to poisoning from these compounds. Dr. Alice Hamilton¹⁴ has stated that young women seem to be particularly susceptible to poisons affecting the nervous system. It has been generally felt that women are more susceptible than men to poisoning from trinitrotoluene, mercury, arsenic and carbon disulfide.¹⁵ This belief has not as yet been substantiated by sufficient clinical data. It has also been stated that lead and carbon tetrachloride are particularly dangerous to women during the antepartum and postpartum periods. However, there are many other materials, in fact, almost any industrial atmospheric contaminant that may exert an injurious effect on the blood forming organs, the liver or the kidneys which may be deleterious to women during these periods. It should be kept in mind that men also are adversely affected by the aforementioned materials. Simply prohibiting women from working with these materials will not solve the problem if men are similarly exposed. Every effort should be made to protect all workers from hazardous materials. If an environment is safe, it is equally safe for men and for women.

Dermatitis will in all probability become the major occupational disease among women during war periods especially in the early states of their employment.¹⁶ Women have always exerted great care of their skin. Rarely have they been exposed to the primary skin irritants which are found in industry. As a result of this skin care and lack of previous exposure the skin of women is generally more easily sensitized than that of men.

12. Anderson, Mary: Some Health Aspects of Putting Women to Work in War Industries, in proceedings of Seventh Annual Meeting of Industrial Hygiene Foundation of America, Inc., Pittsburgh, Nov. 11 and 12, 1942, pp. 165-169.

13. Frequency of Disability Morbidity by Case and Duration Among Male and Female Industrial Workers During 1940, and by Cause Among Males During the First Quarter of 1941, Reprint 2314, U. S. Treasury Department, Public Health Service, 1941.

14. Hamilton, Alice: Industrial Poisons in the United States, New York, Macmillan Company, 1925.

15. Effective Industrial Use of Women in the Defense Program, Special Bulletin 1, U. S. Department of Labor, Women's Bureau, 1940.

16. Carlisle, J. M.: The Health Problem of Women in Industry, in Proceedings of Seventh Annual Meeting of Industrial Hygiene Foundation of America, Inc., Pittsburgh, Nov. 11 and 12, 1942, pp. 170-175.

Care should be exercised in the placement of women, especially light skinned women, on jobs employing dermatitis producers. Many industrial maladies are the result of a specific exposure inherent in a certain process or operation. Dermatitis, on the other hand, occurs in many industries, operations and processes and may result from a great variety of manufacturing materials. The largest number of dermatitis cases in the past have resulted from the use of solvents. There are other occupational diseases which have occurred among women workers which are also prevalent among male workers. However, there is quite apt to be a greater frequency of these diseases among females as women become more deeply absorbed into our war production program.

Synovitis and neuritis of the hand, wrist and arm, and other diseases resulting from repetitive activity may become prevalent among women, owing to the wide use in industry of portable hand tools of the pneumatic and electrical types.¹⁷ This may represent a very important problem at present, for never before have portable hand tools achieved the wide use that they have today in industry.

Poisoning by lead and organic solvents must be rigidly guarded against during war periods. Because of the wide use of these materials, their high toxicity and of the displacement of men in the jobs employing these materials, they should receive added vigilance. During emergency periods, such as the present, there is a tendency to revert back to the more hazardous materials because of the fact that generally they do an excellent job, and the less toxic ones are more difficult to obtain. For example, benzene is now seeing wider use than previously because of the difficulty of obtaining toluene and xylene. War production requires great vigilance on the part of industrial health workers, for our production planners generally relax health precautions.

SAFETY FACTORS—ACCIDENTS

The accident problem associated with the employment of women in industry has received too little attention in the past. Statistics do not provide sufficient information. It does seem reasonable to state that, when women are carefully selected for employment, sufficiently trained in safety and for the job and not subjected to great physical exertion, their safety record should be as good as if not better than that of men, provided adequate machine guards and other safety measures are instituted. These guards and measures must be specific for women. Women are inherently more careful than men, and this should be of value in safety. Speed does not produce accidents but haste does; speed and safety can go together.

Accident statistics have shown that, in peacetime, accidents are fewer to women than to men. This does not prove that women are more safety conscious or that they have received better safety training but rather that women are not subjected to as many or as great accident hazards as men. However, even in peacetime there are a large number of accidents among women. The U. S. Women's Bureau¹⁸ made a detailed study of the accident reports of the states of Indiana and Pennsylvania, which contained 6,000 accidents that had occurred to women in one year. Injury to the upper

extremities were responsible for nearly two thirds of the Indiana accidents and a little more than one half of those in Pennsylvania. Machinery is probably the chief source of accidents to women. Those machines at which most of the accidents were found to occur were punch presses, power sewing machines, drill presses and cutting machines. All these machines can be equipped with proper guards which would have prevented any accidents.

Next to machines, falls are a major source of accidents to women. The U. S. Women's Bureau in analyzing the accident statistics of eight states found from well over one fifth to one third of all injuries to women were due to falls. It was also found that falls resulted in longer periods of disability than do other types of accidents to women.

How the changing occupational picture is affecting injuries to women is shown in recent Wisconsin figures. Reportable injuries to women increased from 147 in December 1941, or 5.8 per cent of all injury cases, to 209 in January 1942 and 240, or 9.2 per cent of the total, in March. As women constitute the largest group of inexperienced workers entering industry, great care must be exercised to insure their safe employment.¹⁹

It has been said that young girls have shown the higher frequency and the women over 40 the lower frequency. However, there is no definite proof of this as a general finding. In England, on the contrary, the older women present the higher accident rate.

One of the most striking features of America's economic development has been the increasing number of women income earners. During the last half century America has created many new kinds of jobs, and many of them have been for women. New inventions, mechanization of industry, the division and subdivision of labor tasks has made it possible for these women to enter the shop and factory. It is idle, indeed, to speak of the exclusion of women from the occupations. Women are in industry to stay.

1800 Fillmore Street.

ABSTRACT OF DISCUSSION

DR. JAMES M. CARLISLE, Rahway, N. J.: For the past year or more I have been carrying out the principles laid down in Dr. Kronenberg's paper, and labor turnover in our plant as well as absentee and accident records among women have been unexpectedly low. Women differ from men in their emotional makeup, and many women come into industrial plants who have never before worked outside the home or under any sort of discipline. They often bring with them numerous small cares pertaining to the home, as well as emotional upsets, which men are better trained to put aside while on the job. We have found the full time services of a woman's counselor helpful. Understanding feminine needs, she is often able to settle personal problems that might be obscure to the masculine mind but are nonetheless important to the worker's nervous equilibrium. Another factor that seems to help is having a woman doctor on the medical staff. Her presence is reassuring to women workers, who become less reluctant to report illnesses and accident or to undergo a physical examination. The maintenance of morale is of particular importance in keeping women on the job. Many who have come into war work on a wave of patriotism find the job losing its original glamor as time goes on and becoming mere drudgery. Then morale breaks down and various excuses are made for quitting. This is most likely to happen if the work is somewhat beyond the worker's strength and thus produces a sense of inadequacy or failure. For this reason I should like to stress the importance of job analysis.

17. Mettert, M.: Occurrence and Prevention of Occupational Diseases Among Women, 1935-1938, Bulletin 184, U. S. Department of Labor, Women's Bureau, 1941.

18. Industrial Injuries to Women and Men, 1932-1934, U. S. Department of Labor, Women's Bureau, 1938.

19. Women's Wartime Occupational Hazards, *Indust. Med.* 12: 486-487 (July) 1943.

which Dr. Kronenberg has already touched on. I refer to the analysis of a specific job with the object of breaking it down into operations that can easily be done by women and those that require a man's strength. This has been done successfully in our plant, with the result that the women suffer less fatigue and at the same time acquire a sense of proficiency and effectiveness. This appears to me to be one of the most important factors in securing maximum production from the woman worker and in keeping her on the job. We have not found women at our work stations in the manufacture of medicinal chemicals unduly susceptible to skin irritations. In spite of the greater area of skin usually exposed by women, our most severe and widespread cases continue to occur among men. It may be that our preventive measures together with the greater care women expend on cleaning and conditioning their skin is responsible for this favorable result. Back injuries have not been an outstanding problem, chiefly because men still are given most if not all of the heavy lifting jobs in our plant. Strains of the wrist and forearm, or tenosynovitis in that region have, however, been a fairly frequent disorder. These are not new, however, as they have been seen not infrequently in typists and clerks who do light but highly repetitive work with the hands. One type of exposure that women tolerate poorly is that of unpleasant odors. They complain of these much sooner than men do and are more frequently nauseated or made actually ill by them. For example, we have found it impossible to keep women at work on a process involving exposure to ethylene dichloride (dichlorethane). Dr. Kronenberg makes no mention of the strictly gynecologic and obstetric complications which may incapacitate women in industry. These have not proved as great a cause of inefficiency and absenteeism as we had at first feared, and it has been our observation that dysmenorrhea is less of a problem among those doing active physical work than it is in the sedentary clerical staff. Menopausal symptoms have been of minor consequence.

ANNA M. BAETJER, Sc.D., Baltimore: There is no evidence that either the physical or the chemical quality of the air, such as the temperature or humidity, toxic dusts, gases and fumes or the sanitary conditions of a plant affect the health or working efficiency of normal women differently from men. In spite of the statements in the literature that women are more susceptible to industrial toxic substances, there is no sound evidence at present to support this view except in cases of pregnancy. As Dr. Kronenberg has pointed out, "if an environment is safe it is equally safe for men and women" and vice versa. On the other hand, certain working conditions suitable for women differ from those for men, owing to several physiologic and social factors. First, since the physical size and strength of women are less than those of men, adjustments in machinery, in protective equipment and in the size and weight of loads are required. Second, because of the lack of experience and training of women in factory work, more care is necessary for the placement, training and supervision of women. Third, because of certain social and economic factors, such as household responsibilities and the care of children and the aged, women often work many hours each day outside the plant and may worry about these responsibilities while in the plant. These factors are largely responsible for the fatigue of women employees and are the principal reason why shorter hours, proper lunch and rest periods and less night work are desirable for women. Fourth, pregnancy and, to a much less extent, dysmenorrhea and menopausal changes make some adjustments in working conditions necessary. Pregnant women must be properly placed and supervised, and the working conditions must be arranged to prevent toxic exposures or fatigue. Lastly, although women have a lower mortality rate than men they have a higher morbidity rate, which manifests itself in industry by greater sick absenteeism for the common non-occupational diseases. The added home responsibilities carried by women probably contribute to this. Greater attention, therefore, must be paid to all factors in the conditions of work which tend to lower resistance to disease. The problems presented by the employment of women cannot be wholly solved by provision of optimum working conditions, but social, economic and other factors also must be considered.

HEALTH MAINTENANCE PROGRAM FOR WOMEN IN INDUSTRY

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That the field of industrial medicine has become more and more that of preventive medicine is manifested by the reports of some of our largest industries. These reports show that year after year the amount of lost time due to occupational causes has become less and less, while that of nonoccupational illness and accident continues almost unabated. In fact, one large industry employing over 300,000 men and women reports that approximately 96 per cent of all lost time from illness and accident arose from nonoccupational sources. It is interesting to note that Lynch's¹ study of 16,648 cases of lost time from illness and accident resulted in almost identical statistics: "Sickness 86 per cent, non-occupational accidents 10 per cent, occupational accidents 4 per cent." He concludes that, if many of these lost man-hours are to be salvaged, the major problems concerned are not those of safety measures within the plant, important as those are.

With hundreds of thousands of women entering industry for the first time, this problem of public health reaches major importance when the future health of the nation is considered. It is well, then, to discuss the various relationships between the industrial physician, the private practitioner and local, state and national health agencies when any health maintenance program for women in industry is to be outlined, for it is a problem of public health in a greater measure than it is an industrial problem.

What part should the industrial medical department play in this consideration and why should health maintenance programs be given more emphasis than ever before, now that women have entered the front line trenches in the production of war materials? Selby² reports that "In a study covering 104 different industrial units in 36 states (1941) sick absenteeism rates for female employees averaged 320 per thousand per year with an average loss of forty-seven days. The male absenteeism rate was but 89 per thousand per year with an average loss of thirty-one days. Disability rates from respiratory infections are more than double those in males, as are those for digestive diseases. Nervous disturbances were six and a half times higher in women than in men. Pregnancy causes an absenteeism rate of 73 per thousand."

Gafaer,³ in a study covering a five year period, found that in disabilities lasting eight consecutive calendar days or longer the frequency rate was 68 per cent higher among female employees.

We may conclude that health maintenance programs for women in industry are important for the following reasons:

1. A much larger sick absenteeism is experienced among women workers.
2. Nutritional and digestive disturbances, loss of weight and so on are more frequently problems.

This paper, in a symposium on "Health of Women in Industry," is published under the auspices of the Section on Obstetrics and Gynecology.
1. Lynch, D. L.: New England J. Med. 227: 209 (Aug. 6) 1942.
2. Selby, C. D.: Why Do Employees Stay Away from Work and What Can We Do About It? read at the Congress on Industrial Health, Chicago, Jan. 13, 1943.
3. Gafaer, W. M.: Pub. Health Rep. 56: 1848 (Sept. 12) 1941.

been chosen from the nursing staff of the industrial medical department because of her intimate knowledge of the working environment of the plant and because of her ability to inspire the confidence of the distressed employee.

When the medical director or girls' counselor recognizes that the employee is suffering from frank psychosis or organic neurologic conditions, his duty is discharged when he has placed these employees in the hands of competent specialists in those fields. However, as Giberson⁸ has stated, "The source of most of the misery in industry results from psychoneurosis and frank maladjustments. The attitude of inferiority, chronic fault finding, overdependence, day dreaming, worrying, chronic nervousness and excessive fatigue are symptoms detrimental to business efficiency and human happiness. Maladjustments may be due to personality clashes, to family tensions, to malnutrition and to clearly recognized crises which appear in sequence in the life of the individual worker."

It is in this group that the work of the industrial physician and girls' counselor takes an important place in any health maintenance program.

Where large numbers of women are employed, the influence of the girls' counselor should be supplemented and a matron's service instituted. Carefully chosen older women are placed out in the factory where they are in constant contact with the employees. It becomes their duty to know every girl in their department. Each matron soon grows to be a recognized friend—some one to whom the women can talk. It is the matron who first notices early signs of anxiety, chronic nervousness, excessive fatigue or illness, and it is then her duty to refer the employee to the medical department, where she may be referred to the girls' counselor if the condition is one of maladjustment. Naturally this phase of health maintenance is not confined solely to the probationary period. However, it is during this formative period that the most benefit can be derived from such a function. The counselor and matron service has proved to be of far reaching benefit and a necessary component part of any medical department serving women in industry.

3. Recreation: That many of our women war workers are not using the hours away from work for diverting or restful recreation has given the industrial medical departments cause for considerable concern. Much short term sick absenteeism has been the result.

It is not the duty of the industrial physician always to suggest how these valuable hours should be spent, but it is his responsibility to investigate repeated absences and impress on the employee the necessity of restful recreation. The problem of excessive fatigue does not end at the factory gate.

II. CHECKING THE HEALTH OF THE ESTABLISHED EMPLOYEE

(a) *Establishment of the Individual Health Record.*—Johnson⁹ has brought to our notice the information that "12 to 15 per cent of employees cause 55 to 60 per cent of the time lost by sickness. This small group is sickness prone and should be the choice for concentrated attention along prevention lines."

Legge¹⁰ is of the opinion that "the plant dispensary is the ideal laboratory to study patients who seek advice for trivial complaints. This provides the opportunity to record and observe early symptoms, develop case reports, locate hazards and prevent morbidity."

The establishment of an individual health record draws the attention of the industrial physician to both of these groups. Further, health conditions in various departments of the plant may be compared and, finally, the overall problem of sick absenteeism may be intelligently studied.

(b) *Periodic Physical Examinations.*—The conducting of periodic physical examinations of those in apparent good health is such an established practice that little discussion of this phase of health maintenance needs elaboration. Early tuberculosis, pregnancy, circulatory and venereal diseases, diabetes and malnutrition are brought to light through this routine physical checkup.

In concentrating only on the "sickness prone" and the employee who seeks aid for "trivial complaints," it is well to remember that the apparently healthy employee may be developing a far more disabling disease.

(c) *Consultation Service.*—The medical director should set aside certain hours of the day to be devoted to consultations requested by the employee. The number of such requests will vary in direct proportion to the thoroughness of his health maintenance program and with the sincerity with which it is conducted.

This consultation service is especially important now that the problems women bring to industry are rapidly increasing. Dysmenorrhea, pregnancy and the menopause directly concern the industrial physician. In case of dysmenorrhea, he must decide how much pelvic congestion resulting from the employee's type of occupation influences her symptoms. Suitable wards where women may rest during this time are a part of the medical service and an important aspect in lessening lost time from this source. Further investigation as to the cause of the dysmenorrhea is the responsibility of the employee's own physician.

The menopause is another period in the life of the female employee that presents added problems. At no time in the industrial history of this country have there been so many women over 40 years of age gainfully employed. A condition with which the industrial physician rarely concerned himself now demands attention if he is to have a complete health maintenance program. It is not within his province to treat these employees medically—that is for the family physician—but transfer to lighter occupations requiring less nervous energy and concentration, along with sympathetic understanding, goes far in lessening disability during this trying period.

The consultation service is important in the case of pregnancy. The industrial physician should encourage the female employee to report to him as soon as she learns that she is pregnant. Thus he may advise transfer to lighter and less fatiguing work. His duty to this employee includes checking her environment to make sure there is no exposure to toxic substances. Further, he should see that she is receiving antepartum care by her own physician. If for any reason it is felt that this employee should not continue at work, the decision of the family physician should be final.

8. Giberson, Lydia G.: Psychiatry in Personnel Work, *Indust. Med.* 12: 164 (March) 1943.

9. Johnson, Orlen J.: Public Health and Medical Relationships in Industrial Health, *Am. J. Pub. Health* 32: 1157 (Oct.) 1942.

10. Legge, Robert T.: Bottlenecks and Progress in Industrial Medicine, *Indust. Med.* 11: 530 (Nov.) 1942.

To counsel women employees properly, the individual doctor should be familiar with the recommendations of the Report of the Committee on Health of Women in Industry of the American Medical Association¹¹ and the statements prepared by the Children's Bureau and the Women's Bureau of the U. S. Department of Labor.¹²

(d) *Health Education*.—The conventional approach to health education for employees is through the medium of posters, pamphlets, folders, articles in plant papers, speeches and motion pictures. By these methods the common cold, nutritional disturbances, tuberculosis, venereal diseases and the importance of proper care of the teeth may be brought to their attention. Such an educational approach should be made colorful and interesting. Posters designed by the U. S. Public Health Service act as an excellent example of this type of propaganda. Because many of these diseases are the greatest cause of disability among female workers, it is now more important than ever before that such an educational program be conducted.

(e) *Routine Factory Inspection*.—The routine inspection of conditions under which female employees are working is essential to good health. Of course the problems of ventilation and lighting are very much the same for male as well as female workers. However, the question of fatigue is one that requires much consideration, particularly now that many women are manning the machines formerly run by men. The adjustment of these conditions should not be left solely to the safety director, for only too often he does not appreciate the physiologic and structural differences between male and female workers. Furthermore, it is the responsibility of the medical director to know to what extent the female employee is subjected to toxic exposure. As mentioned previously, this is of vital importance in the case of the pregnant woman.

(f) *Health Conditions Outside the Factory*.—Knowledge of conditions in the community where the factory is located is an essential phase of a good health maintenance program. Frequent contacts should be made with the local health agencies so that the industrial physician may be prepared for epidemic keratoconjunctivitis, contagious diarrheas, tuberculosis, syphilis, gonorrhea, smallpox and poliomyelitis. The industrial physician often considers the health of the employees as something apart from that of the surrounding community. However, close cooperation with those charged with the responsibility of the problems of public health has proved most valuable to the industrial physician.

MEASURES EMPLOYED TO LESSEN LOST TIME ONCE SICKNESS APPEARS

(a) *Care of Minor Ailments*.—The recording of and caring for minor ailments is the best opportunity the industrial physician has to further "prevention." Abdominal distress, repeated colds and excessive menstrual periods are often found to be the early symptoms of gastric or duodenal ulcer, appendicitis, early tuberculosis or definite pathologic conditions in the pelvis. Emphasis on the advisability of a further examination by the patient's own physician sends many

to the doctor's office for relief of symptoms commonly considered too trivial to necessitate medical consultation.

(b) *First Aid in Urgent Illness Occurring While at Work*.—The giving of first aid to employees who become seriously ill while at work is the responsibility of the industrial medical department. Its duty is not discharged by seeing that the employee is returned to her home. She should be cared for in the industrial hospital until such time as the family physician can be notified and his advice followed. Length of disability from serious illness can be vastly lessened by seeing that prompt medical attention is obtained for the seriously ill employee.

(c) *Hospitalization Through Group Insurance*.—To protect employees adequately during illness, it has become increasingly evident that hospitalization should be provided through group insurance or some other plan.

Many industrial institutions have sponsored this arrangement. Such protection is especially needed at this time because of the overcrowded and inadequate housing conditions in many of our large industrial communities.

Proper nursing care shortens the period of disability. This is an important objective.

(d) *Visits to Disabled Employee by the Industrial Nurse*.—Management's interest in the disabled employee is made evident by the visits of the industrial nurse. The sick employee deeply appreciates sincere concern for her health. Confidence in the medical department is increased by sympathetic understanding and encouragement at such times. The duties of the industrial nurse include arrangement of sick benefit payments, allaying fear and apprehension on the part of the employee concerning her job, and other activities. It is a field of personal service.

(e) *Rehabilitation*.—The final chapter in the health maintenance program concerns the period of rehabilitation following serious illness or accident.

The employee should receive a careful physical examination at this time, and placement at work should depend on the findings of the industrial physician as well as on the opinion of the employee's own doctor that she is physically able to return to work.

The industrial physician is the one who best understands the worker's ability to do her usual work and advises that she be given less strenuous tasks or that she be allowed to work only part of the shift during this period of convalescence. He should be informed by the employee's physician as to the exact nature of the previous disability and value his opinion as to the present status of the employee's health. However, the final responsibility of safe placement at work must rest with the industrial physician.

CONCLUSION

To many this outline of a health maintenance program for women in industry may appear too detailed or wholly unnecessary. However, it is based on an experience in an industry that for many years has successfully employed thousands of women workers.

The ethical relationship between the private practitioner and the industrial physician, which has been discussed, should be reemphasized.

The success of any health maintenance program in industry depends on the extent of the "fact finding" of the industrial physician and the cooperation of the doc-

11. Hesselstine, H. C.; Burnell, Max; Litzenberg, J. C.; Schauffler, G. C.; Seibels, R. E.; Phaffen, L. E., and Williams, P. F.: Women in Industry: Preliminary Report of Committee on Health of Women in Industry of Section on Obstetrics and Gynecology, J. A. M. A. 121:799 (March 13) 1943.

12. Standards for Maternity Care and the Employment of Mothers in Industry, U. S. Department of Labor, Children's Bureau and Women's Bureau, 1942.

tor in private practice. That this can be done ethically and scientifically has been proved repeatedly. The best interests of the employee, the employer, the medical profession and the community are served when the responsibility of such a relationship is clearly understood.

ABSTRACT OF DISCUSSION

DR. LYDIA G. GIBERSON, New York: In the light of my own experience, the employment of matrons not specifically trained in social, nursing or psychiatric work might easily lead to a diffusion of effort and in extreme cases to the formation of shop cliques, which would defeat the purpose of the matron service. Wherever available help exists, the employment of a graduate nurse who is in the first place thoroughly familiar with the industry in which she is employed would be ideal and she should be given the additional training necessary to carry out the functions described by Dr. Burnell. Such a nurse should be of such a personality to invite confidence, and her patience and tact should be of high order. Fully recognizing the outstanding work many counselors have contributed, particularly during the war emergency, the soundness of some of the counseling services has often been impaired by a lack of specific training in recognizing emotional factors and their relationship to physical disease. My experience has shown that the creation of what may be termed a "zone of neutrality" by management has succeeded in gratifying measure in absorbing many of the frictional shocks arising from psychiatric or straight physical causes. The "zone of neutrality" is the psychiatrist's office where an employee may talk over his problems without any fear. The obvious conclusion is that there is a dearth of trained people, particularly as they relate to my branch of industrial medicine. It would be necessary that these be available before Dr. Burnell's well conceived program could be properly implemented. The only apparent answer for the moment is the additional training, at least in rudimentary fashion, of the already overburdened industrial medical personnel and the fundamental education of all persons coming into direct supervisory contact with the workers.

DR. H. A. VONACHEN, Peoria, Ill.: The attitude should change on certain jobs where the safety devices are based on man operation. One should regard women with consideration of the physical and emotional limitations of the sex, remembering that the female must be considered as three fourths of a man physically. I feel that each job should be studied from the standpoint of monotony, fatigue, lifting, lifting aids, lighting and rest periods. Perhaps the most important consideration is the physical examination (preemployment) with careful attention being paid to the all important previous medical history of the employee, particularly that portion which deals with female disorders and menstrual history. If the preemployment examination is thorough, at least 60 per cent of the potential industrial problems will be eliminated at the start. I feel that regular supervision allows early recognition of changes in the employee's attitude and application to work and reference of the troubled employee to the matron. We have instituted this system in the plant with which I am affiliated, with good results. Our policy with regard to pregnancy is explained to the prospective employee in a pamphlet given at the time of her induction. We cooperate with the family physician in this problem, the same as we do in all problems of the employee which are in the field of general medicine. It is our policy to refer immediately to the physician any case which we uncover and find to belong in the sphere of the family physician. In the case of pregnancy we require that the employee bring in a letter from her physician each month, keeping us informed as to the progress of her pregnancy. A leave of absence is arranged in the fifth month, carrying on until three months post partum, at which time she is returned to work if she can successfully pass another examination. We have an educational program pointed toward preventive medicine and personal hygiene which is carried on through the medium of the plant periodical, which is published biweekly and in which articles dealing with medical problems and diet are regularly presented in a section devoted to the medical division.

PROPER PLACEMENT OF WOMEN IN INDUSTRY

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The entrance and acceptance of women in the heavier industries has been almost as spectacular and unexpected as the unsuspected attack on Pearl Harbor itself by the Nipponese. Little did we realize, at the start of all this, the important role women would occupy in the essential war industries.

Prior to this the operation of lathes, grinders, core-makers, molders and so forth was strictly a man's job. The mere thought or suggestion previous to the outbreak of hostilities with the Axis of women running the various heavy machines was pooh poohed and joked about. The majority of those in the heavy machine shops thought and said it could not be done. The emergency, however, became so great that something had to be done. Men were needed for our armies on all fronts—but they were also needed by our essential war industries. Military necessity demanded the release of manpower for the Army, Navy and the Marines. Production would have to be curtailed unless a worthy substitute could be found.

The problem of employing women to replace men on lathes and other heavier machines was started in the early part of 1942. The use of womanpower was not to create new jobs for them but to use their skill during the emergency. As a result of this newly created endeavor, many problems presented themselves both to industry and to society. Men were being replaced gradually by women between the ages of 18 and 60. The problems they presented were complex and difficult.

TRAINING PERIOD

The most obvious problem of all was the training of our newly acquired women employees. This of itself entailed many serious discussions between management and the government. The final outcome will probably come with the end of hostilities.

Before our industry could employ women, special permission had to be obtained from the Department of Labor. Our state laws pertaining to the employment of women definitely stated that they were not to work after 11:40 p. m., nor could they work more than forty hours per week. This law, of course, would have to be rescinded by the state department of labor in order to allow industry to employ women on the various shifts. As a rule the shifts usually are divided into three shifts per day consisting of eight working hours.

In addition to revising the labor laws, immediate plans had to be made to furnish proper rest rooms and toilet facilities as a necessary item to feminize the industrial world. Supervision had to be taught and educated in the proper handling of women workers. Women, as a rule, are very sensitive to harsh treatment. The old line foreman is definitely out of place in the modern plant.

A brief outline of our experience in training of female employees can be stated as follows (a word.

however, should be said here that our training program, since Pearl Harbor, has passed through many phases): A survey had to be conducted by plant management in the early months to determine the various jobs, in the many departments, that could be filled by women. It was concluded by the survey that hundreds of jobs could be done by our prospective female employees.

In order that the trainee might be properly fitted for her job, a training program as similar as possible to the working conditions of the plant itself had to be devised. Close cooperation between plant and the local vocational school was necessary. To facilitate matters further, identical machines were used at the vocational school as were used at the plant. Instructors were also furnished by the plant management. (The men picked as instructors were usually experts in their particular field. Although instructors in the vocational school, they were maintained on the payroll of the firm.)

The training period usually consisted of four to six weeks. At the completion of the training, the trainees were hired and placed on machines as operators.

Since the inception of these courses, the vocational school has become a unit of the defense training program—which is now known as the war production program—operating day and night to train qualified men and women to fill vacancies caused by plant expansion and loss to the armed forces.

The training of applicants depends a great deal on the type of work to be done by the individual. Of course, at all the training is done at the vocational schools: part of it is carried on at the plant itself.

In the early months of our program these trainees were not carried on the payroll, but as time went on the training program again changed, so much so that the following program is now in effect. It is the management's responsibility to induct new workers properly and to supervise adequately.

We now have two types of learners: student learners and regular learners. The student learner is hired and placed on the payroll but is not sent into the shop until she receives a thorough training in the particular job she is to accomplish when she has properly fulfilled the requirements at the vocational school. This type of learner spends eight hours a day for about four to six weeks or until she is judged capable. This type of worker is usually placed in the tool room or some special section in the assembly. The learner is then labeled as "specialized."

The regular student, however, is somewhat different. She is placed on the payroll and spends half her time in the plant and the other half at the vocational school. This program is in effect until her instructor and supervisor considers her eligible as a qualified operator. A few of the occupations taught at the plant itself, where women are now being used, are making cores, molding and even cleaning castings.

I quote our experience with the first 3 women employees hired for shop work:

1. A woman aged 20, single, who weighed 110 pounds (50 Kg.) and who was 5 feet 4 inches (163 cm.) in height, had formerly been a typist. As a learner coming from the vocational school she was given an opportunity to study and observe an internal sizeromatic grinder at work. When capable, she was transferred to a machine. She participated in the bonus plan and other plant activities. During the interval she was

allowed to run a machine and was shown her mistakes. She was treated on the same basis as a man. In two weeks' time she was operating an internal grinder exceptionally well. She was doing good work; the quantity of scrap was surprisingly low.

2. A single woman formerly a grammar school teacher qualified for the job of bench burrer in two weeks.

3. A woman aged 40, married, with three small children, sought a job at hole tapping to replace her 21 year old brother, called by the Selective Service. After two or three days she complained of her hand and arm aching. She continued working, but her efficiency dropped to a very low standard within three weeks. She was transferred to a sensitive drill press and within two weeks was excelling at the work. A woman aged 21, single, whose weight was 175 pounds (79 Kg.), was hired for the hole tapping job. She mastered the task in two days and is doing well.

CLASSIFICATION OF ENDOCRINE TYPES

From a theoretical point of view, women can perhaps be classified endocrinologically so that their behavior and physical and mental make-up can be explained on this basis, but from a practical standpoint of endocrinology one cannot properly place a female employee.

Women workers, as a rule, are subject to "nervous upsets." Few women have the physical strength that men do, probably because of the lack of rigorous physical training. Women workers do not have the same muscular strength as men. Muscular fatigue occurs more readily in women than in men. Thus, girls raised on the farms and accustomed to farm work have well developed musculature and are easily adjusted to hard laborious industrial work. For this reason a man with an average male musculature but with a slight heart murmur would be placed on a light job, whereas a woman with average female musculature and having the same heart murmur would be rejected for the same job. We believe the woman, with less physical reserve, would more quickly call on (and use up) her cardiac reserve than the man.

The glandular factor as it is reflected in women in industry presents some problems. Some glandular disorders have an obvious solution, as, for example, the pronounced hyperthyroid type, which can be corrected only by surgery. But the obese hyperthyroid and the menopausal woman present a problem of employment which is rather difficult to solve and which probably can be only completely solved when we have given these women a thorough trial in industry.

The average industrial interviewer when choosing a woman to do somewhat heavier work is often misled into selecting the heavier woman, confusing fat for musculature and strength. Actually the stout woman has little advantage over the lighter woman in the heavier industrial work except in certain situations where she can use her weight, as in pushing a food truck. In general, an obese woman has less stamina and less physical reserve and is more apt to succumb to various disorders because of her weight, varying all the way from varicose veins to cardiac decompensation.

The menopausal woman presents a tremendous problem, which can be divided into three major factors: (1) obesity, just described, (2) nervous and psychiatric disorders, and (3) hypertension. Of course there are many other factors, including the industrially impossible female who combines all the major factors

of the menopause—the obese, the psychiatric and the hypertensive woman.

All the psychiatric and nervous women should be examined, prior to employment, by a qualified psychiatrist. This, however, is most essential where women applicants predominate. His is the problem whether or not the applicant is stable enough for an industrial position.

The hypertensive case can be classified according to arbitrary standards. These standards vary of course with the needs of industry. In times like these, where manpower is at its low ebb, standards must be forgotten. I remember, prior to our entrance into the war, where an applicant (male or female) was rejected with a systolic pressure range above 150 mm. of mercury and a diastolic above 90 mm. of mercury. As a maximum passing requirement, at the present time, a systolic pressure range of 200 mm. of mercury and a diastolic of 100 mm. of mercury is acceptable, although we try to place these persons in light or very light occupations.

It would be ideal to go into elaborate studies and determine the origin and type of hypertension, but this is not practical in large scale hiring. Only with the passage of time would we be able to determine how successful we had been in our selective process by determining statistically what percentage of applicants can maintain the position to which they have been assigned. If the percentage is extremely low it will mean that we have been too lenient in our selection, but if the percentage is extremely high it implies that we have been too rigid in our selection and have probably deprived war industries of some useful employees.

PREEMPLOYMENT PHYSICAL EXAMINATION

A thorough preemployment physical examination is just as applicable to women as it is to men. As a matter of fact, the problems differ as to both sexes.

Women bring certain problems to industry, and these problems are, medically, mainly due to their difference in physiology—to the fact that women bear children and men do not. Thus, they present the additional problems of menstruation, the menopause, pregnancy and the care of children. This should be a nucleus for the examining physician to bear in mind in the examining of all female employees.

It must be borne in mind that women are more apprehensive than men. To many of these women the thoughts of a complete examination frightens them. Frequently they have never worked outside their own home or may have come from jobs where no physical examination was required. Then too the thought of being examined by a male physician makes many women, if not all, rather apprehensive. She is willing to go to her own physician, or any other physician of her choice, when she is sick or thinks something is the matter with her. She is willing to be thoroughly examined and submit to various tests to get rid of her ailments. In an industrial plant neither of these factors applies, and most women feel most apprehensive.

As industrial physicians we want to give the employee as thorough an examination as possible both for her own sake and for the sake of her fellow employees but still have it pleasant and free from any embarrassment. We want her to realize that the examination is for her benefit as well as for the particular industry she is to enter. These factors sometimes play such a part as

to influence and make it difficult to interpret properly the resulting examination. This particularly is true for the average industrial physician who himself is a newcomer to an entirely different field.

Women, as a rule, are usually less nervous when they know they are going to be examined by a woman physician. Thus, a woman physician can do a more thorough examination, particularly as regards hernias, pregnancy, cystoceles and rectoceles, without embarrassment on the part of the woman applicant.

A complete pelvic examination is not done at any of our preemployment examinations. If a thorough examination is necessary and essential from preliminary workup, she is referred to her family physician for this pelvic checkup.

The physical examination, to be of any benefit, should be as thorough as possible and should include a brief personal history. The examiner must know the type of work to be performed by the employee. One should observe the general appearance of the applicant, check for varicose veins, note all deformities, examine for hernias, both femoral and inguinal, and note the condition of the applicant's spine, skin, kidneys, blood pressure and vision. X-ray examinations, a Wassermann test and urinalysis should be included.

The physical requirements will change from time to time, depending on the type of work and also on the type of industry. I remember, not too long ago, when prospective employees had to be practically perfect before they were passed physically for employment. Today this does not hold. Owing to the shortage of manpower we had to lower our standards and we are still lowering them.

One must bear in mind that it is only by a proper and thorough physical examination that we can properly place our prospective employees. The applicants of today have been sifted over and over rather thoroughly, and what remains to be hired is not a very select group, physically speaking. The incidence of major defects in this group runs high. Before the war, applicants with major defects were not hired; but now we must try to place as many applicants as we can, despite their large handicap, in occupations where they can do no harm to themselves.

These handicapped employees should be encouraged to recognize their responsibilities as permanent employees alongside those who are better endowed physically. This applies only to those physical handicaps which are not objectionable or dangerous to fellow employees. Diseased persons should not be accepted into industry. A problem recently came to my attention of a young woman who was passed by the examining physician. A notation was made on her chart of a dermatitis of both hands of a noncontagious or non-infectious nature. She in turn was accepted by the interviewer and supervisor, who were told of the skin rash. It was not too many hours after starting that her fellow employees started to grumble and become dissatisfied because of her skin condition. It became obnoxious to them and they threatened to leave their machines unless the woman was removed. This happened not once but four times in various departments until we had to ask the girl to leave her job temporarily—at least until she had the rash on her hands cleared up completely.

Another condition which is frequently missed and difficult to diagnose in the female applicant, unless otherwise obvious, is an inguinal hernia. We have seen four inguinal hernias in the past six months. Prior to this I had not seen one single inguinal hernia in the past eleven years. These hernias, if they had existed before employment, were completely missed. In the first instance a girl aged 18 years was employed only three weeks when she came to the hospital complaining of pain and a lump in her right side. Two other women were in their late twenties and were employed only two to four weeks. The fourth was a girl in her late teens and was employed only one week.

I do not believe that women who are pregnant should seek employment, especially in the heavier industries. Of course, if they are already employed, certain allowances should be made. The matter of time is an arbitrary one, depending on the length of time employed, her physical and mental attitude, previous pregnancies and finally the danger to which she is exposed. Epileptic women, however, should not be accepted under any circumstances on machines either light or heavy. They can nevertheless be employed on light inspection work away from all machines and on clerical jobs.

Women, as stated before, were placed almost exclusively on clerical work, but now they are placed in the shop. Among the machines which women are operating efficiently are milling machines, turret lathes, tapping and drilling machines (including large multiple spindle drills), punch presses, grinders of many types, including internal and external cylindric, thread, centerless and surface, as well as cutters and other tool grinders. They are also becoming proficient in the foundry as coremakers, molders and casting cleaners.

FOLLOW-UP

The follow-up system used by various industries is a valuable adjunct in evaluation and proper selection of the new applicants. It is true that, no matter how perfect we think our selection of female factory workers may be, they nevertheless require continuous follow-up to determine whether or not the new applicant is mentally and physically satisfied with her newly assigned job and also with her new environment. It must be remembered that only a few of the women had any shop experience before taking on their present jobs. All the women employed had to learn the jobs they now perform, but they are doing them as well as male employees, whom they now outnumber about three to one.

Here in our plant all follow-up of new employees was previously done by male clerks from the personnel department. They interviewed male and female employees, but as time went on it was decided to use women in the follow-up of women. This job was then designated to the female counselor. It is the function of these counselors to become thoroughly acquainted with all the help allotted for the overseer. The first interview with the female employee takes place about the fifth or sixth day after she has been hired. This interview usually takes place in the department. This is often spoken of as the "first contact." The employee is approached for the purpose of getting acquainted. It is strictly intended as a friendly chat, having both parties discuss what is uppermost in their minds. The

discussion will, of course, vary with the individual. Some will discuss the type of work which is assigned, while others will want to know about insurance, health, sickness and occasionally home affairs. These interviews, as a rule, lead to a better understanding and better cooperation between supervisor and employee. Usually, health problems which were merely mentioned to the examining physician are more thoroughly discussed and explained.

The second interview, which is really considered the follow-up, takes place five or six weeks after hiring. The discussions here usually tie up with the first interview, only on a larger scale. By this time both employee and counselor have become acquainted and a closer relationship thereby exists. In our plant, care is exercised by our counselors never to divulge any personal confidences or expose the employee to supervisor, management or any other plant agency. Everything is held in strict confidence. It should be stated here, however, that supervisors were rather slow to get adjusted to these new developments. But at the present time they have realized the value and necessity of this service and they are more cooperative. I understand that at times this second interview is almost entirely medical. It seems that women are much happier and contented when they can find a welcome ear to tell their troubles to. In addition, we find that they discuss rather freely their emotional status and their special female functions of the menopause, menstruation, pregnancy and dysmenorrhea. Also isolated cases are brought to light in which help can be given with later transfer to a more suitable occupation. As an example I will briefly cite a case which was brought to my attention by one of the counselors:

Mrs. H. L. received some radium burns about several of her fingers while in the employ of a research medical laboratory during the first world war. The burns were only minor and completely passed both the examining physician for the company and the examining officer of the Navy. She was assigned to a bench burring job. This in turn required her to use emery paper for buffing and polishing. This caused an irritation and aggravation of the radium burns about the fingers. She was reluctant to mention anything about this to her foreman for fear of losing her job, but she did mention it to her counselor, who in turn, with the permission of the woman, reported the incident to the medical department, which in turn recommended an immediate transfer to another job that required little use of the fingers. This recommendation was acted on, which was most satisfactory to the employee.

The third and final interviews take place about five to six months later.

CONCLUSION

The important thing to keep in mind now is that women are on the job in war industries. They are turning out the quantity and quality of work the war demands.

The majority of our women are successful at small precision machine work and are more attentive to a repetitive job than men. Generally speaking, women are not as inventive as men. If a machine should break down nothing is done about it, whereas a man will make every effort to find out what is wrong and then make arrangements for the proper repair.

Our nation will need the particular strength and ability of women even more as time goes by. It is

only sound sense to do everything possible, within the plant and beyond it, to safeguard their health and efficiency for ultimate victory. Total war is a new game for Americans, but I am positive that we have the ability to utilize all our resources effectively.

ABSTRACT OF DISCUSSION

DR. W. A. SAWYER, New York: Most industries are employing a great many persons with major impairments. This is not too serious, provided there is careful job placement. If jobs are studied from the point of view of what a woman can do and the work is reorganized mechanically, as it has to be in some instances to fit the woman's physical capacity, the end results are generally satisfactory. We are all amazed at the variety of jobs which women can perform. More attention must be paid to a woman's outside activities and responsibilities than ever has been paid to a man's. Even if a woman does not have a home with children to look after, which gives her two jobs instead of one, there are many things which she has to do for herself and which, with a long work week, she can do only if she takes time off. That in part accounts for the high rate of absenteeism. Woman's place in the community in some respects requires more of her than it does of a man. Industry will have to adjust its schedules and hours of work to enable women to do two jobs. If the strain of doing two jobs becomes too great or if the woman is not sufficiently strong physically and well enough integrated mentally, sooner or later she will become fatigued and possibly seriously ill. I do not believe that a woman trying to carry a double load can last much more than a year without exhausting herself. No woman who is conscientious about her home and children is going to be able to work as wholeheartedly at her job when she knows that the home and family are suffering as a result. In my own community there are far too few agencies and facilities to care for children during working hours. If this war is to go on for a number of years, certainly this phase of the problem must be developed more adequately. Recently the question arose of changing to the night shift a woman weighing 106 pounds who had two small children. She lost her husband in North Africa a year ago. Her mother is taking care of the children during the day, but she does it unwillingly and not too well. When the question of changing to the night shift came up this worker rebelled, and rightly so. If she should go on night work there would surely be a breakdown. One could cite cases of this type again and again. There is no problem of training women to do the work they are wanted to do. Allowances have, of course, been made for them physically, and the absence rate is high. The question of pregnant women has not been a troublesome one. The great problems have been nervous exhaustion and the usual run of other illnesses which, I believe, are due in large measure to the strain of trying to do two jobs.

JENNIE MOHR, Associate Industrial Economist, Women's Bureau, U. S. Department of Labor, Washington, D. C.: Despite the shortage of manpower, it seems rather extreme to say, as Dr. Barlow does, that "standards must be forgotten." Even if workers are scarce, it does not pay to take on those incapable of working or incapable of sustained production. Standards need not be forgotten, but they must be realistic. That means that the factors discussed by Dr. Barlow should be part of a placement program for each individual worker and that workers be utilized to their fullest capacities, but not beyond. There seems to be some difference of opinion among physicians as to the extent to which the menopause is a serious deterrent to the placement of older women. Dr. Barlow calls it "a tremendous problem." Other physicians have said that, unless some specific abnormal condition appears, industrial life seems to offer no greater obstacle to older women than do other circumstances. It is true that older women have not been used in certain industries to the extent to which they are now being used. In others, such as the manufacture of clothing and textiles, older women have long been employed as a matter of course. In any case, as

Dr. Barlow indicates, their placement on jobs must be the result of a careful analysis of their physical and psychological abilities. A well defined plant policy concerning the employment of pregnant women is an essential part of a placement program. The fear of being fired as soon as they are known to be pregnant leads women to conceal their pregnancy and makes impossible their protection against work or working conditions that may be especially dangerous for them. With respect to laws regulating the employment of women, it should be noted that the forty hour regulation to which Dr. Barlow refers pertains only to the payment of overtime beyond that number of hours and applies equally to men and to women. Laws regulating the hours women may work vary from state to state. In the state in which Dr. Barlow's plant is situated, women may work fifty-four hours a week. One must not forget that women are not new to industry, not even to heavy industry; they are new only to some plants. During the first world war women operated many machines, such as turret and bench lathes, punch and drill presses, millers and grinders, and took on many new jobs under the pressure of war. In 1930 there were more than 60,000 women operatives in iron and steel, machinery and vehicle industries, 3,000 of them in blast furnaces and steel rolling mills. Our present concern is to see that now, and continuing after the war, the placement of women in jobs is done with full consideration of all we can learn about their needs, limitations and capacities. To this end it would be of the utmost value if physicians would undertake studies to determine the specific effects on women of certain occupations or certain working conditions about which we can at present only speculate.

DR. GEORGE MORRIS PIERSON, Philadelphia: In addition to the points brought out by Dr. Barlow there are many other problems of far reaching importance that must be considered in connection with the placement of women in industrial jobs. It has long been recognized that women should not be required to do heavy lifting. Efforts to regulate this has been attempted, but no satisfactory formula has yet been devised. The safest rule is to limit all lifting to a minimum and to avoid it whenever possible. The role of fatigue takes on added importance in the case of women employees. It has long been recognized that fatigue is one of the chief factors responsible for reduced production, accident frequency and sickness absenteeism. Since it is admitted that on the whole women are more susceptible to fatigue than are men, special efforts should be put forth by employers to control the fatigue factor in the women employees. The length of the work week has been shown to be one of the most important influences in the production of fatigue. An example of this was found in England; when the work week was increased to seventy-five hours women suffered 287 per cent more accidents, an increase over twice as great as that observed in men under similar conditions. The total work accomplished in a given period of time is definitely increased by regular periods of rest. Closely allied to this phase of the subject is the question of night work. It is generally conceded that the physical effects of night work are much more disastrous to women than to men and that such deterioration occurs sooner in women. In order to minimize accident hazards, women who are employed, especially in those industries in which complicated machinery is used, should abandon their ordinary attire for suitable work clothes. They should be required to wear overalls, suitable low heeled, closed toed shoes, gloves whenever rough or irritating materials are to be handled, and the hair, particularly if it is long, should be adequately protected. The introduction of women into industry has focused renewed attention on the importance of providing good working conditions and making available clean, comfortable and cheerful rest rooms, wash rooms and eating facilities. The often discussed and important problems connected with menstruation, pregnancy and the menopause in women workers need no further elaboration. Even with the successful conclusion of the war it is not unlikely that many women now employed will continue to be actively engaged in various industries. The questions that arise in connection with their proper care are therefore not merely ones for immediate concern but will engage the consideration of employers and industrial physicians in the future as well.

SPECIFIC PROBLEMS OF WOMEN
IN INDUSTRY

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From the obstetrician's and gynecologist's point of view specific problems of women in industry should include menstrual disturbances or abnormalities, the menopausal syndrome and pregnancy. Gonorrhea and the other venereal diseases with the exception of syphilis have as yet no established relationship to absenteeism. Even though syphilis is a serious complication in obstetrics and gynecology, the dermatologists and syphilologists have exhibited special interest in its relation to employment. Nutritional needs and food shortage loom larger as the complexities of food ration and the point system extend particularly for wives and still more so for mothers who have limited time for shopping and preparation of meals because of their employment. Other important considerations are the preemployment examination and placement, health maintenance programs and working conditions of women employees. By assignment, this elaboration will be restricted to menstrual disturbances, menopausal symptoms and pregnancy in relation to employment.

The term woman or women will mean all females of the age of 15 years and over, unless specifically indicated. In a strict sense the biologic and physiologic age should be employed, but because of its variability in relation to the definite chronological age and because a mean average is adequate the arbitrary selection of 15 years and over has been rather generally accepted. Objections to the employment of these really young women has come forth, but the extreme labor shortage and the great urgency for employees have caused a relaxation of the rules governing employment and necessitate a survey of the whole problem. Women may be divided readily into two groups: (1) menacmic, or 15 to 44 years inclusive, and (2) postmenacmic, or 45 years and over. Again, this is an arbitrary division but it will serve the purpose.

The need for women in almost all industries has reached the greatest peak for percentage employment. It is common knowledge that women have recently, for the first time, entered into types of work which heretofore was performed exclusively by men. Many industries encountered new and troublesome problems with the admission of women employees, while those plants accustomed to female workers experienced little difficulty as a rule. Even plants experienced in the problems peculiar to women faced new problems through the use of women who were unaccustomed to employment. In many instances new policies, as well as the increased number of women, favored difficulties.

In normalcy those who could not or should not work regularly and dependably could be replaced. Also in normalcy the placement of the employee was easier because of much lower turnover rate and because of regularity in replacement. The total number of employed women continues to grow, and the choice of acceptable employees becomes less and less favorable from a medical point of view.

Because reliable information is not available, it has been necessary to utilize opinions and ideas to formulate even a preliminary program for the conditions peculiar to women in relation to their employment. However, certain facts are available on the female population, and these permit some calculation.

FEMALE POPULATION AND LABOR FORCE

It has been estimated that 18 million women will be needed and probably obtained for employment by December 1943. Table 1 indicates the trend since June 1940. For May 1943 there were about 400,000 women desiring employment, while about 15,900,000 were employed, which makes a total labor force of 16,300,000. The great number now working and subsequently needed in nonagricultural positions must be secured from urban areas (generally communities of 2,500 and more). This means that about 1,700,000 more female workers must be procured from an essentially empty reservoir to fulfil the estimated quota for December 1943.

TABLE 1.—Female Labor Force

Employment and Unemployment in Continental United States Exclusive of Institutional Population and Armed Forces Expressed in Millions of Persons Aged 14 Years and Over.

	Total Labor Force	Unemployed	Employed		
			Total	Agri-cultural	Nonagri-cultural
June 1940 *	13.9	2.7	11.2	1.5	9.7
May 1941.....	13.3	1.8	11.5	1.2	10.3
May 1942.....	14.2	1.0	13.2	1.4	11.8
May 1943 †.....	16.3	0.4	15.9	1.8	14.1

* Earliest available estimates in 1940.
† Latest available estimates.
(Department of Commerce, Bureau of Census, Monthly Report: The Labor Force, May 31, 1933, Current Surveys: M. R. L. F., No. 12).

TABLE 2.—Female Population

United States Census, April 1940, Expressed in Approximate Millions

Age Groups	Rural		Urban	Total
	Farm	Nonfarm		
15 to 44 years inclusive.....	6.3	6.2	19.5	32.0
45 years and over.....	3.3	3.4	10.7	17.3
15 years and over.....	9.6	9.6	30.2	49.4

June 1943 estimates would not exceed 2 per cent probably that of April 1940

Table 2 gives the distribution by community and menacmic status. On calculation of present day population of women it seems definite that the number would not amount to 51 million. Of this number nearly 60 per cent are in urban communities. Approximately 66 per cent of the urban group are under the age of 45.

A further restriction to the theoretical calculation of available women is the number of mothers with small children (table 3). Recently it was reported that about 7 million women have children under the age of 5 years and 11 million have children under the age of 9 years. At the present time it is very probable that about 3 million women have children less than 1 year of age. These data illustrate some of the conflicting views relative to an available labor force. Another factor is the demand in individual communities which is out of proportion often to the available help. This applies to concentrated industrial areas and to small urban communities where special projects have absorbed all the available laborers and need more. Industries competing with one another have caused much disturbance in production through a rapid turn-

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over of employees. This great change has taxed the plant physician, who must examine each employee whether the employee remains or leaves within a short period.

The use of women in all and in war industries is concretely expressed in table 4. In December 1942

TABLE 3.—*Estimated Number of Women with Children, April 1942**

Expressed in Approximate Millions

	Labor Force	Nonlabor Force	Total
Under 5 years.....	0.5	6.2	6.7
5 to 9 years.....	0.6	3.5	4.2
10 to 16 years.....	0.9	3.7	4.6
Under 16 years.....	2.0	13.4	15.5

* Latest available figures.³

there were approximately 15 million in all industries, which was about 30 per cent of all women. About 3 million were employed exclusively in war industries. This represents about 7 per cent of all women, or 23 per cent of the employed women. The projected figures for December 1943 are 18 million in employment, or 36 per cent of all women of 15 years and over. From this group some 6½ to 8 million women, or 13 to 16 per cent of all women or 36 to 44 per cent of women employees will be utilized in war industries alone.

The labor shortage is so acute in some localities that some plants would have to employ many who could not pass the satisfactory preemployment physical examination if 100 per cent quota of employment was to be accomplished. Table 5 lists the types of female employment as of May 1942. The great scarcity of present day domestic and personnel help illustrates that the great bulk of this group have already shifted into other types of work or retired from work. It seems certain that many from other groups have gone also to the war industries. It is rumored that some professionally trained women, as nurses, have given up their profession to go directly into ordinary employment because of better pay of the latter. This type of shift is a distinctly unpatriotic act at a time when skilled and experienced people are in such great need.

TABLE 4.—*Estimated Number of Women Employed*

	Millions	Per Cent of All Women	Per Cent of Employed Women
December 1942			
All industries.....	15 *	30	..
War industries.....	3.5 †	7	23
December 1943			
All industries.....	18	36	..
War industries.....	6.5-8 ‡	13-16	36-44

* Bulletin 193, Woman's Bureau, U. S. Department of Labor, July 1942.

† Women's Bureau Release "Women in the Labor Force," July 18, 1942.

‡ Author's estimate.

Arguments continue on the relative merits of essential work in amusement and recreation.

Various answers and proposals remain before us for meeting the labor shortage and production demands. The solution appears to be the elimination or reduction of each of the causative factors. Lynch¹ observed that 6.3 per cent of all sickness disability of eight or more days duration resulted from genitourinary con-

ditions. Mothers or wives may elect to absent themselves to perform household duties, such as laundering, shopping or caring for a sick member of the family. These mothers and wives often work almost as many hours at home as at the plant, which predisposes to absenteeism. Others may remain away from work for personal and nonvalid reasons.

An evaluation of women not in the labor forces indicates that sacrifices must be made by many of these if they are to become employees. Likewise, absenteeism may be increased in this group. Table 6 shows the relation of the unemployed female of the age of 14 years and over to their class. In April 1943 there were approximately 36,200,000 females not working. Slightly under 30 million (29,400,000) were doing their own home and house work, while slightly over 4 million (4,200,000) were in school. From these and other figures it is evident that, if the increase in the labor force is to continue as planned, more wives and more mothers must enter industry.

TABLE 5.—*Type of Work for the Estimated 13,500,000 Employed Women, May 1942**

	Millions	Per Cent of Total
Domestic and personnel.....	3.4	25
Manufacturing.....	3.0	22
Professional (nurses, teachers and others).....	1.9	14
Retail and wholesale trade.....	1.9	14
Agricultural.....	1.5	11
Government service.....	0.8	6
Amusement and recreation.....	0.7	5
Transportation and public utilities.....	0.4	3

* Latest available estimates.³

TABLE 6.—*Estimate of Females Not in the Labor Force by Class of Nonworkers*

Millions of Persons 14 Years and Over, April 1943*

Total	Own Home Housework	School	Unable or Too Old	Other
36.2	29.4	4.2	2.2	0.4

* Latest available data.

The Labor Force Bulletin, L. F. B. No. 3, June 17, 1943.

WOMEN EMPLOYEES AND PRIVATE PHYSICIANS

The ratio of physicians to the public and the employed woman has changed greatly. The armed forces have and will continue to take many physicians. At present there are about 88,000 active physicians for the civilian populace, which makes a ratio of 1 physician to slightly over 1,400 people. By December 1943 the ratio will likely be 1 active physician to each 1,500 civilians. This will make a mean average of 1 active physician to slightly over 200 employed women. Obviously these averages do not reveal the deviations which occur in various communities. These facts reveal that every physician should become even more interested in the problems of women as related to their employment. This education on the part of the physician is essential for better cooperation with the plant physician in the interest of employees and the physician's patient. The better the cooperation, the more conducive it is to the war effort. Previously, industrial physicians were not particularly concerned with obstetric and gynecologic conditions, for such states fell in the category of nonindustrial conditions. Nowadays the industrial physicians face greater burdens through new problems in connection with all new workers, many of whom are unskilled, unprepared and unaware of dangers or

1. Lynch, D. L.: Industrial Health and the War, New England J. Med. 227: 209 (July 30) 1942.

safety precautions. Industrial physicians will welcome the opportunity of reciprocation in appropriate cooperation with the obstetrician and gynecologist.

MEDICAL PROBLEMS

The Committee on the Health of Women in Industry of the Section on Obstetrics and Gynecology of the American Medical Association² made recommendations pertinent to the essentials of a medical service in industry, general hygiene for women in industry, need for physical examinations and placement and the states of menstrual abnormalities, of the menopause and of pregnancy. It has been insisted³ that the future programs and policies will have no better foundation than the present unless exact information is obtained about these specific problems of women in industry.

Adequate data on absenteeism from menstrual irregularities and distress, the menopausal syndrome and pregnancy are not available. Progress is obstructed badly through the lack of specific data. Such data could be accumulated by the cooperation of a sufficient number of employees, their employers, the respective industrial physicians and an unbiased competent group, commission or committee. Such a committee, group or commission should have a fair representation of obstetricians and gynecologists. The government or some private agency could make a valuable contribution through adequate support for a thorough study on causes of absenteeism of women employees. With several million women in industry an enormous number of days lost must be expected unless and until the causes can be reduced or eliminated. The number of women serving in the armed forces could be used for observations on problems of menstrual abnormalities, for these are normal healthy women. Any lesson learned even with this group could be applied to others. The first step is to get facts, for ideas are unreliable.

The placement of women in industry, the health maintenance program and working conditions for female employees have been elaborated on by others.

Since the employer must use to the best advantage all women employees, since replacements are not readily available, specific problems are truly important. It is common policy for most industries or industrial physicians to refer the employees to competent physicians for the personal problems of the employee. The industrial physician, directly or through councilors or matrons, may learn of employees who would benefit by consultation with the employee's own physician. Specific problems include menstrual disturbances (amenorrhea, menorrhagia, and metrorrhagia and dysmenorrhea), the menopause and pregnancy. Menstrual and menopausal disturbances are symptoms. First, it must be stated that present day information indicates that ordinarily menstrual and menopausal disturbances are not the result of employment. A prospective employee may fail to reveal her catamenial distresses or abnormalities, particularly if she suspects that such an admission would be unfavorable toward her employment.

MENSTRUAL DISTURBANCES

A. *Amenorrhea*.—If one excludes pregnancies and the menopause there are comparatively few instances of amenorrhea in the fully matured woman. Amenor-

rhea may occur in the teen age women, but it is usually not significant. Even so, Jameson⁴ and Hessektine and Spear⁵ recorded instances in which amenorrhea was the first or early symptom of pulmonary tuberculosis in women under 25 years of age.

It is general knowledge that tension, worry or undue excitement may be associated with either amenorrhea or a menorrhagia. Younger women in positions of responsibility may manifest such physiologic behavior. Anesthetists, instrument nurses and airline stewardesses have been typical examples. There is no reason why young women in other industries should not be potentially subject to the same reactions. A change of schedule or a transfer to another institution, although one may be doing the same work, may relieve the condition promptly. This correction can be expected only in the absence of organic states. Organic causes must be excluded. This is the function of the employee's personal physician.

B. *Metrorrhagia and Menorrhagia*.—Metrorrhagia and menorrhagia must be considered as a symptom of an existing pathologic condition within the individual. Menorrhagia and metrorrhagia should be considered symptoms of a serious existing condition such as cancer and other neoplasms, especially in the late childbearing years and at or after the menopause. There are no data to indicate that amenorrhea, menorrhagia or metrorrhagia results from employment or comes about because of injury or industrial accident. Each patient should be promptly referred to her physician or obstetrician and gynecologist for appropriate diagnosis and therapy.

C. *Dysmenorrhea*.—Dysmenorrhea is a problem in industry, for it causes a certain amount of absenteeism with some women. As a rule, each industrial organization has developed its own method of caring for women who develop symptoms while at work. Most plants are trying means to keep the employee on the job. The Committee on Health of Women in Industry² reported that:

Many women have little or no incapacitation during menstruation. Those with mild distress may be benefited by dietary improvement, by the avoidance of unnecessary physical and strenuous activities for a few days prior to the expected period or by the administration of mild sedatives and analgesics under the direction of the plant physician or the employee's personal physician.

Severe cases of dysmenorrhea may require the attention of the specialist. Dysmenorrhea is a symptom and results from many conditions such as pelvic inflammatory states, endometriosis, pelvic neoplasms, cervical stenosis, maladjustments, hormonal imbalance, migraine and allergic states. Adequate rest facilities at the plant are desirable, and a brief rest may cause only a slight interruption in the day's work rather than a loss of several hours. Hot applications to the lower abdomen or back may be helpful. Stimulants, as coffee, tea or other hot drinks, are sometimes beneficial.

Hundley, Krantz and Hibbitts⁶ claim that secondary dysmenorrhea offers little difficulty for it can be easily eradicated, but that primary dysmenorrhea presents many problems demanding thorough study before treatment is instituted. They continue with the thought that no panacea has yet been discovered. Browne⁷

4. Jameson, E. M.: *Gynecological and Obstetrical Tuberculosis*, Philadelphia, Lea & Febiger, 1935, p. 19.

5. Hessektine, H. C., and Spear, W. M.: *The Significance of Menstrual Disturbance in Pulmonary Tuberculosis*, Am. J. Obst. & Gynec. 27: 32 (Jan.) 1934.

6. Hundley, J. M., Jr.; Krantz, J. C., and Hibbitts, J. T.: *Dysmenorrhea, Including Clinical and Pharmacological Studies on Benzedrine Sulfate*, M. Clin. North America 23: 273 (March) 1939.

7. Browne, O'Donel: *Ovarian Dysmenorrhea: Its Etiology, Diagnosis and Treatment*, J. Obst. & Gynec. Brit. Emp. 46: 962 (Dec.) 1939.

2. Hessektine, H. C.; Burnell, Max; Litzenberg, J. C.; Schauffler, G. C.; Seibels, R. E.; Phaneuf, L. E., and Williams, P. F.: *Women in Industry: Preliminary Report of Committee on Health of Women in Industry of Section on Obstetrics and Gynecology*, J. A. M. A. 121: 799 (March 13) 1943.

3. Hessektine, H. C.: *Women in Industry—Present and Future Problems*, Ohio State M. J. 39: 545 (June) 1943.

suggests that 65 per cent of all women between puberty and the menopause suffer from some monthly discomfort. Such suffering might refer to coincidental headaches, mammary engorgement and tenderness, pain in the legs or distress in the lower abdomen or lower back. Those subject to "menstrual" headaches or severe lower abdomen distress will be the major contributors to absenteeism.

Most of the hormones have been used in the treatment of dysmenorrhea. The temporary value and limitations of this therapy have become evident. Balanced reports have come from the pens of Fluhman,⁸ Novak,⁹ Kurzrok and Birnberg,¹⁰ Sturgis and Meigs,¹¹ Salmon, Geist and Walter¹² and many others.

Cannon¹³ admits that psychologic factors may augment the intensity of dysmenorrhea pain. Meanwhile, Wittkower and Wilson¹⁴ found that as children the dysmenorrhea group showed psychologic maladjustment four times as often as the control group, and as adults the dysmenorrhea patients showed a high excess of two main personality groups. Additional support to the psychogenic factor comes from Boynton and Winther¹⁵ by their therapeutic controls, in which 8 per cent on placebos reported complete relief.

Miller¹⁶ stressed the importance of recognition of overlapping, of predisposing and of causative factors and the need for rational therapy based on a knowledge of fundamental causative factors.

Black,¹⁷ Colcock,¹⁸ Meigs¹⁹ and Marshall and Poppen²⁰ resorted to presacral neurectomy with good results, but each warns that the need is only for the severely affected but infrequent patients who do not respond to simpler and safer therapies.

It is common knowledge that with general physical and psychologic improvement a considerable percentage of women benefit or are relieved. Thyroid extract should be used only when the basal metabolic test may indicate a hypothyroidism. Thyroid extract may give remarkable improvement to teen age women who have a hypothyroidism. Others may by dietary balance and improvement gain as much relief. Still others may avoid incapacitation through the appropriate dosage of sedatives, as phenobarbital (0.0325 to 0.065 Gm.) once to twice daily, beginning a few days before the expected onset of the catamenia and continued through the period of expected distress. The elimination of undue physical activity with adequate sleep favors normalcy.

8. Fluhman, C. F.: Endocrine Theories of Dysmenorrhea, *Endocrinology* 23: 393 (Oct.) 1938.

9. Novak, Emil: The Cause and Treatment of Primary Dysmenorrhea, *South. Med. & Surg.* 102: 177 (April) 1940.

10. Kurzrok, Lawrence; Birnberg, Charles, and Livingston, Seymour: Treatment of Dysmenorrhea, *Am. J. Surg.* 46: 353 (Nov.) 1939.

11. Sturgis, S. H., and Meigs, J. V.: The Use of Estradiol Dipropionate in the Treatment of Essential Dysmenorrhea, *Surg., Gynec. & Obst.* 75: 87 (July) 1942.

12. Salmon, U. J.; Geist, S. H., and Walter, R. I.: The Treatment of Dysmenorrhea with Testosterone Propionate, *Am. J. Obst. & Gynec.* 38: 264 (Aug.) 1939.

13. Cannon, D. J.: Dysmenorrhea: The Oldest Theories and the Newest Treatment, *J. Obst. & Gynaec. Brit. Emp.* 44: 13 (Feb.) 1937.

14. Wittkower, Erich, and Wilson, A. T. M.: Dysmenorrhea and Sterility: Personality Studies, *Brit. M. J.* 2: 586 (Nov. 2) 1940.

15. Boynton, Ruth E., and Winther, Nora: The Treatment of Primary Dysmenorrhea with Estriol Glyconide, *J. A. M. A.* 119: 122 (May 5) 1942.

16. Miller, N. F.: Dysmenorrhea, *Canad. M. A. J.* 42: 349 (April) 1940.

17. Black, W. T.: Presacral Sympathectomy for Dysmenorrhea and Pelvic Pain, *Ann. Surg.* 103: 903 (June) 1936.

18. Colcock, B. P.: Presacral Neurectomy for the Relief of Severe Primary Dysmenorrhea, *S. Clin. North America* 21: 855 (June) 1941.

19. Meigs, J. V.: Excision of the Superior Hypogastric Plexus (Presacral Nerve) for Primary Dysmenorrhea, *Surg., Gynec. & Obst.* 68: 723 (April) 1939.

20. Marshall, S. F., and Poppen, J. L.: Presacral Neurectomy in the Treatment of Dysmenorrhea, *S. Clin. North American* 17: 927 (June) 1937.

Analgesic drugs single or in combination may give some relief but unpredictably so. Antispasmodic (mydriatics included) may eliminate pain caused by spasm. The principle is to correct or alleviate the cause of the dysmenorrhea rather than to treat the symptoms.

The plant may have rest rooms where women who become ill may have a brief rest period. Often a short interval of rest will permit the employee to return to her routine work, thereby contributing to better production and saving the employee loss of pay. Obviously the plant physician may need to give first aid care for those who become ill while at work. Every one knows the importance of keeping people regularly at work as many days as possible.

The extreme shortage of labor has encouraged each industry to consider carefully the problem of dysmenorrhea in its employees. Tuttle²¹ has found it expedient to make a thorough pelvic examination and refer to gynecologists those who have repeated attacks of dysmenorrhea. He reduces the absenteeism from dysmenorrhea "largely by checking up on repeaters. . . ." The special attention which the medical department has given to the menstrual irregularities has benefited both the United Air Lines and the employees.

Absenteeism causes concern to the industrial physician because it requires medical attention periodically, to the employer because of interference with production and to the employee because of loss of pay through lost work. From the foregoing it is evident that dysmenorrhea is not an occupational disease and thus belongs to the private physician, either the employee's personal physician or an obstetrician and gynecologist.

Most women subject to menstrual pain can be benefited or relieved by adequate and appropriate therapy. The exact determination of the underlying cause of dysmenorrhea is the first step in the therapy.

MENOPAUSE

The menopause is the physiologic end of reproduction. The transition may be associated with symptoms of variable and even extreme degree. Many, if not most, women go through the menopause peacefully and without distress or annoyance. The latter group experiences little or no reaction in the routine of life. Unfortunately, some women at the climacteric suffer vasomotor and emotional instability. These reactions reveal themselves often under the stress of excitement and maladjustment. The excitement may occur in pastime or recreational activities as well as in necessary daily routines, such as shopping and home work. Many activities commonly indulged in by women may be disturbing at this period of life. Any distracting noises, conflicting personalities, maladjustment and like factors at the plant can activate or accentuate these menopausal symptoms but do not produce the primary condition. Thus, menopausal symptoms are essentially a personal condition and not an industrial malady.

It seems that proper placement is an important phase in keeping the women steadily employed. Reports come out that women in the menopause may and do work very well. Those who were previously employed continue in their regular work. Change or transfer to another type of work appears to be very seldom indicated but may be appropriate occasionally.

21. Tuttle, A. D.: Unpublished data.

The employee may because of her emotional instability become irritable and thus lessen production. These same women may become provoked, angered or excited more readily than before the onset of the climacteric. Unfortunately, not all women are aware of their unsettled emotional state. Unfortunate also are those who are aware of it but have no control of the situation. These women may be completely relieved by estrogenic replacement. Diethylstilbestrol by mouth is quite efficient, easily taken and economical for the employee. The dosage may vary from 0.5 to 1 mg. daily for several weeks (eight to sixteen) followed by a progressive and graduated reduction but under the direction of the employee's personal physician. Occasionally there may be some vaginal bleeding caused by the withdrawal of the drug. A recurrence of this bleeding should be looked on as a serious symptom, possibly uterine or cervical cancer, until by curettement and biopsy it is excluded. The administration of estrogens before cessation of menstruation may be followed by greatly altered menstrual periods and cycles, and thus estrogens should be withheld until the menstrual periods have vanished. Sedatives, as phenobarbital, may serve better while menstrual periods occur and may be an adjunct to estrogenic replacement subsequently.

Women of the menopausal age may have vaginal wall relaxations and beginning prolapse, and thus their proper placement is particularly desirable. Pelvic examination of those approaching or through the menopause could elicit early vaginal wall relaxation, beginning prolapse and other gynecologic conditions which may become progressively worse.

PREGNANCY

Pregnancy is a biologic and physiologic function of mature women. This function may interfere with normal activity and employment. Many pregnant women work about their homes and in their gardens, but full shift of work at the plant and also as many hours at home work is undesirable and should be avoided. The type of work should be individually considered for each gravid employee. Individualization is often disturbing and confusing in a large industry, but with the cooperation of the employee's physician there should not be great difficulty. The evaluation of type of work must be based on the employee's ability to perform the work with reasonable safety to herself and to the pregnancy. As the pregnancy advances the woman becomes more awkward and hence must be protected more carefully from falls. She should not climb or walk where delicate balance is involved or particular hazards exist. Regular shifts will be conducive to regular rest. Every pregnant employee must be protected particularly from toxic substances.

The employee should consult her own physician or obstetrician early in the pregnancy (within eight to ten weeks from the last menstrual period). The physician should take a complete antepartum history, do a complete physical and pelvic examination and determine the pelvic measurements. A routine urinalysis, a hemoglobin or cell volume determination and a white blood cell count should be completed at the first visit and a serologic test made for syphilis. Other tests should be made when indicated.

The Committee on the Health of Women in Industry²² urged that "each employee inform the proper authority in the industry about her pregnant state within the first trimester (three months), that she obtain a statement from her physician to the effect (1) that her work is not contraindicated and (2) that she

may work not longer than a given period of pregnancy. If contraindications to work arise, the employee's physician should notify the employer.

"The patient should not return to work until six weeks after delivery and then only when her physician notifies the employer that she may return. If her return to work at six weeks is inadvisable because of her own condition or because her baby actually needs her at home, she should request further extension of time."

The committee² felt that discontinuance of work in the last trimester or earlier would be desirable but by all means by the thirty-second week of pregnancy.

The antepartum care should be carried out by the employee's own obstetrician, for he is prepared to give antepartum care and he has the responsibility of the parturition. In early and mid pregnancy visits to the obstetrician at three week intervals may be sufficient for normal women. The program will vary with conditions or complications. Any emergency at the plant can and is treated by the plant physician until the private physician can take over.

The American committee approved the plan drafted by Danforth, Kosmak De Normandie and Adair²² for maternal care. Care of complications must receive special consideration. The management of obstetric hemorrhages, toxemias of pregnancy and puerperal infection has been outlined by Williams, Mussey and Falls respectively.²³

The Committee on the Health of Women in Industry² made special comment, as:

Unintentional abortion is the most likely obstetric complication in the first trimester of pregnancy and it may have no relationship to the employment. These accidental abortions result perhaps more often from abnormal or diseased ova and not because of work or activity. Excessive vomiting is the second most likely problem in the first trimester.

The last trimester is complicated most often by toxemia of pregnancy, placenta previa or abruptio placentae. All of these obstetric emergencies are incompatible with employment of any kind and need immediate treatment.

The midtrimester is a comparatively safe period, but any complication may arise at this time, as well as any other, such as anemia, hypertension and nephritis, pyelitis, neoplasm (both benign and malignant) and many other conditions.

Other complications will also alter the program. Genital tract infections may require treatment from every two to seven days. Antisyphilitic treatment should be weekly. The management of medical complications will necessitate a specially devised program. In the event of excessive weight gain or evidence of toxemia, special instructions must be given. These are only some of the conditions that the obstetrician may encounter in the care of his patients.

SUMMARY

Women can work efficiently in many industries but, because of physiologic behavior peculiar to them, attention to their peculiarities should reduce the amount of absenteeism and also protect the obstetric and gynecologic health of the individual.

The cause of amenorrhea (gravid and menopausal causes excluded) should be adequately investigated.

Menorrhagia and metrorrhagia should be looked on as a serious sign until such condition as cancer, other neoplasms and other conditions have been eliminated.

Primary dysmenorrhea may require special study. Secondary dysmenorrhea is associated with many conditions and thus its successful therapy will depend on correction of the underlying factors.

22. Adair, F. L.: *Maternal Care*, Chicago, University of Chicago Press, 1937.

23. Adair, F. L.: *Maternal Care Complications*, Chicago, University of Chicago Press, Chicago, 1938.

The menopause may be associated with emotional instability.

Pregnancy will require special consideration.

Menstrual abnormalities, the menopause and pregnancy are nonindustrial conditions. These conditions are classified as personal conditions, and thus obstetric and gynecologic care should be administered by the employee's personal physician.

Private physicians should acquaint themselves about industrial problems in relation to obstetric and gynecologic conditions in order that they may collaborate with industrial physicians in common problems.

Until factual and sufficient data can be procured and published on pregnant states, menopausal symptoms and menstrual abnormalities in relation to employment, directions and recommendations on employment, placement, safeguards, reduction of absenteeism and introduction of health measures will be guided by ideas and opinions.

Some agency, private or governmental, should support studies to supply this badly and urgently needed information. Fair and unbiased observers, committee or commission, could compile and analyze the data. From such a basis the employees would benefit by the gains for their welfare, and the employer should benefit by a reduction of absenteeism. The industrial physician would be aided by specific findings, and the private physician could prescribe more reliably for his employed patients.

APPENDIX

From the Monthly Report on the Labor Force, Department of Commerce, Bureau of Census, Washington, D. C., Dec. 10, 1943, special surveys MRLF, No. 18, the following estimates of female employees are listed:

July 1943, 17,100,000 employed, 600,000 unemployed.
November 1943, 16,000,000 employed, 300,000 unemployed.
December 1943, not yet available.

The difference for the greater number for the summer employment was explained on the basis of the use of the 14 to 19 year olds. Unless an unexpected and sudden rise occurs, the predictions for December 1943 cannot be fulfilled.

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ABSTRACT OF DISCUSSION

DR. GOODRICH C. SCHAUFFLER, Portland, Ore.: Dr. Hessel-tine merely mentions the matter of preemployment physical examination and health follow-up and leaves us with the inference that it is the more or less universal practice. This is not the case, particularly in so-called mushroom war industries in the Western area. Pressure could be put on laggard industries to install such systems. Well integrated programs in operation have proved their value. Basic thinking in the matter involves, first, the creation of a central committee endowed by funds from all contingent organizations and vested with authority to act.

DR. GEORGE W. KOSMAK, New York: It is evident that the physiologic status of women must be given definite thought and consideration when compared with that of men, and social responsibilities likewise cannot be neglected. This phase has not been accorded sufficient importance in the general desire for developing more manual power in the nation and in the opportunities opened up for more gainful employment. No matter how great the endeavor may be to place men and women on the same plane, politically and economically, there still remain those anatomic and physiologic differences in the sexes which cannot be eliminated entirely. This is evident from the proposals suggested in Dr. Hessel-tine's paper for the special

handling of the medical problems arising from the wider employment of women in various, particularly wartime, industries. Such admissions show the need of a changed approach to a subject which in the course of time may bring about conditions that do not compensate for immediate economic advantages which may have resulted. Hitherto women in industrial occupations have not been subjected to the same stresses and strain, and their labor has been adjusted to what it was believed they could do within their physical limitation. Now they are being required to do heavy and more hazardous work as generally understood and on a plane with men, and with equal pay. For the mutual protection of industry and the women to be employed, and should this necessity for women's work continue, will it not become necessary before employment to devise methods of physical examination to avoid breakdowns? For while immediate demands for her labor may appear primary, the fact cannot be set aside that woman has certain functions which are paramount and which in their widest sense must not be subordinated. If conditions peculiar to the sex are to be determining factors in assuring successful and continuous employment, with lessened absenteeism due to these, may it not be wise to develop standards to provide the means for more extended preliminary physical examinations? Such standards have been worked out by a committee from the New York Academy of Medicine and include a careful history as well as a physical examination of all candidates for employment, particularly in the hazardous occupations. Whether industry as a whole will undertake this precautionary measure to avoid accidents, breakdown or absenteeism remains to be seen. However, as I have also noted, the more extended employment of women has taken from them social responsibilities which it is to be hoped may be restored when demand on their contribution to the war effort has become eliminated with the advent of peace.

DR. J. C. LITZENBERG, Minneapolis: Employment of women in industry presents somewhat different problems from employment of the same women not so employed. This is not only because they belong to the so-called weaker sex and are less robust than men but because they are generally less efficient and employable than men in the heavier industries. Employed women offer other problems because they are potentially child-bearing persons subject to gynecologic, menstrual and menopausal disturbances, or they may become pregnant, any of which facts may reduce their efficiency or cause absenteeism or totally incapacitate them. Nevertheless women must be employed in industry to alleviate the manpower deficiency. But it is not as simple as that, for, "man for man," the woman cannot equal her stronger brother except in the not-too-heavy industries. In spite of physical limitations, she has proved surprisingly efficient and valuable in keeping up production, quite as efficient in many types of work as a man. Inevitably, however, these specific problems of women in industry do interfere with production. All out war production is quite as important as all out frontline effort. The latter is impossible without the former. It seems impossible to approach the needed production without the employment of even more women. At the beginning of 1944 it is estimated that 18 million will be employed, of which number 3 million will be in exclusive war industries. Dr. Hessel-tine quotes Browne as saying that 65 per cent of women suffer from menstrual discomfort, which may reduce efficiency and be a fruitful source of absenteeism or even incapacitation. One can easily imagine that among so many women much absenteeism will be the result to say nothing of other gynecologic disturbances. Dr. Hessel-tine's most constructive suggestion concerns the lack, at present, of exact information about the influence of these specific conditions on women in industry. Much medical information is available about these conditions on women in general, but no adequate data of their influence on industry itself are at hand, such as the amount of absenteeism caused by menstrual irregularities and distress, the menopausal syndrome or pregnancy. Until factual and sufficient data can be procured on the effects of pregnancy, menstrual abnormalities and menopausal symptoms in relation to employment, safeguards and reduction of absenteeism, the introduction of health measures will still be guided by ideas and opinions rather than by data supported by scientific conclusions.

THE USE OF BASAL TEMPERATURE GRAPHS IN DETERMINING THE DATE OF OVULATION

PENDLETON TOMPKINS, M.D.
PHILADELPHIA

A simple method for determining the time of ovulation has been discovered but unfortunately has not been brought to the attention of clinicians at large. It is based on variations in body temperature during phases of the menstrual cycle. My purpose in this presentation is to describe the technic of securing graphic records of daily basal temperatures, to discuss the interpretation of these records and to demonstrate their usefulness in indicating the date of ovulation by showing graphs submitted by patients under treatment at the present time.

In 1904 van de Velde¹ discussed the variations in body temperature during phases of the menstrual cycle. Since that time at least a score of excellent papers have dealt with the subject, particular emphasis being placed on the correlation of temperature changes and ovulation. Barton² gave a historical review and correlated temperature and electrical potential variations due to ovulation. D'Amour³ compared temperature records with other methods of determining ovulation time. Martin⁴ has shown an accurate correlation between phases of the endometrium and the temperature curve. Greulich and Morris⁵ made a convincing clinical test of the accuracy of temperature records as an indication of ovulation. Laparotomies were performed on 14 patients whose temperature records were available. In 8 cases ovulation was expected, in 6 it was not. Inspection of the ovaries at laparotomy confirmed the prediction in every case. Harvey and Crockett⁶ presented temperature records of 1 patient over a thirteen month period and gave an involved mathematical analysis of the variations observed. Lyon⁷ discussed the evaluation of dysmenorrhea by temperature records. Mocquot and Palmer⁸ reported the effect of endocrine therapy on basal temperature. Palmer and Devillers,⁹ Williams¹⁰ and Allan Palmer¹¹ illustrated their reports with graphs similar to those presented here. Rubenstein¹² is the most

enthusiastic American investigator. Zuck¹³ and Williams and Simmons,¹⁴ among others, have made clinical use of the method. Barton² and Vollmann¹⁵ furnish extensive bibliographies.

All this literature may be summed up thus: A record of body temperatures taken daily under standard conditions shows a typical curve during the menstrual cycle. The temperature is relatively low during the first part of the month, drops to a minimum about the time that ovulation occurs and rises definitely thereafter to a relatively high level, which is maintained until the next menses, when the temperature drops abruptly. Before the menarche, after the menopause, and in men, similar temperature fluctuations are not found. If conception occurs, the temperature will remain at the high postovulation level. The important feature is the rapid rise in temperature at ovulation. Many clinicians

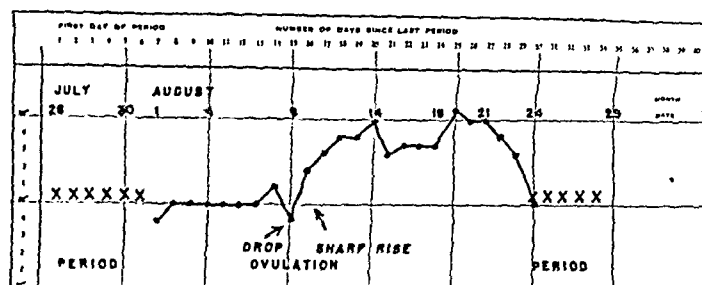


Chart 1.—An ideal temperature graph submitted by a patient. The cycle was 30/5-6. Note (1) the relatively low temperature prior to ovulation, (2) the slight drop on August 9, which occurs at ovulation, (3) the sharp rise following ovulation, (4) the relatively high level after ovulation and (5) the sharp drop when menstruation begins. The temperatures shown are exactly those submitted by the patient but have been regraphed and annotated for publication.

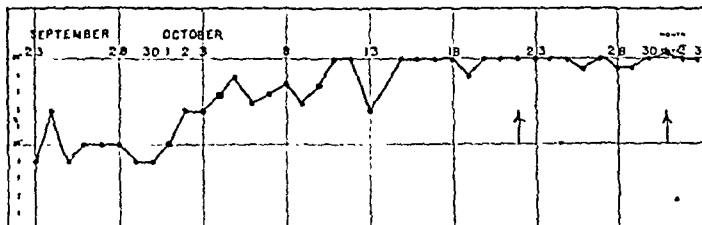


Chart 2.—Use of the temperature graph in sterility studies on a patient with very irregular menses. The patient, aged 22, was married in 1940 and had not conceived probably because her husband was at sea much of the time. Menstruation had occurred on May 11, 1943, June 21, July 16, August 15 and September 7. She first consulted me on September 20. It appeared that the chief problem was to select the fertile period, a problem which could not be solved simply by using the calendar because the intermenstrual interval varied from three to six weeks. Accordingly a temperature graph was started. As shown, the rising temperature on October 2 suggested ovulation, and coitus was advised. On October 22 the patient reported by telephone that the graph showed a sustained high temperature. A tentative diagnosis of pregnancy was made (first arrow). Pelvic examination on October 25 was indeterminate. On November 1 the Friedman test was reported positive (second arrow), and pregnancy has since proceeded uneventfully.

attest the practical accuracy of this fact; several laboratory minded writers question it. The remarkable observation is not that temperature records sometimes fail to indicate ovulation but that they ever indicate it. The method is so simple, so inexpensive and so helpful that the utmost use should be made of it. When temperature graphs are used in the study of sterility it is taken for granted that all other well known investigations, such as sperm counts, tubal insufflation and basal metabolism tests, are carried on as usual. The basal

From the Philadelphia Lying-In and Maternity Department of the Pennsylvania Hospital.

1. van de Velde, T. H.: *Ueber den Zusammenhang zwischen Ovarialfunktion, Wellenbewegung, und Menstrualblutung*, Haarlem, F. Bohn, 1903.

2. Barton, Dorothy Smith: *Study of Temperature and Electric Potentials in Menstrual Cycle*, Yale J. Biol. & Med. 12: 503-523 (May) 1940.

3. D'Amour, F. E.: *Comparison of Methods Used in Determining Time of Ovulation*, J. Clin. Endocrinol. 3: 41-48 (Jan.) 1943.

4. Martin, Purvis L.: *Detection of Ovulation by the Basal Temperature Curve with Correlating Endometrial Studies*, Am. J. Obst. & Gynec. 46: 53-62 (July) 1943.

5. Greulich, Walter, and Morris, Edward S.: *An Attempt to Determine the Value of Morning Rectal Temperature as an Indication of Ovulation in Women*, Anat. Rec. 79: 27 (March) 1941.

6. Harvey, O. L., and Crockett, Hazel E.: *Individual Differences in Temperature Changes of Women During the Course of the Menstrual Cycle*, Human Biol. 1: 453-468 (Dec.) 1932.

7. Lyon, R. A.: *Evaluation of Dysmenorrhea by Basal Body Temperature*, Surg., Gynec. & Obst. 76: 729-731 (June) 1943.

8. Mocquot, P., and Palmer, R.: *Body Temperature Curve Under Influence of Sex Hormones and in Menstrual Disorders*, Presse méd. 48: 305-307 (March) 1940.

9. Palmer, Raoul, and Devillers, Juliette: *Ovarian Cycle and Temperature Curve*, Compt. rend. Soc. franç. de gynéc. 9: 60-69 (Feb.) 1939.

10. Williams, W. W.: *The Basal Metabolic Rate, Basal Body Temperature and the Ovarian Cycle*, Am. J. Obst. & Gynec. 46: 662-667 (Nov.) 1943.

11. Palmer, Allan: *Basal Temperature in Disorders of Ovarian Function and Pregnancy*, Surg., Gynec. & Obst. 75: 768-778 (Dec.) 1942.

12. Rubenstein, Boris B.: *Functional Sterility in Women*, Ohio State M. J. 35: 1066-1068 (Oct.) 1939; *Vaginal Smear, Basal Body Temperature Technic and Its Application to Study of Functional Sterility in Women*, Endocrinology 27: 843-856 (Dec.) 1940. Rubenstein, B. B., and Lindley, D. B.: *Relation Between Human Vaginal Smears and Body Temperatures*, Proc. Soc. Exper. Biol. & Med. 35: 618-619 (Jan.) 1937.

13. Zuck, Theodore T.: *The Time of Fertility and Sterility During the Human Menstrual Cycle*, Ohio State M. J. 35: 1200-1203 (Nov.) 1939; *Relation of Basal Body Temperature to Fertility and Sterility in Women*, Am. J. Obst. & Gynec. 36: 998-1005 (Dec.) 1938.

14. Williams, W. W., and Simmons, F. A.: *The Clinical Approach to the Diagnosis of Sterility*, Urol. & Cutan. Rev. 46: 558-570 (Sept.) 1942.

15. Vollmann, Ursula: *Body Temperature and Correlation to Phases of Genital Cycle of Woman*, Monatschr. f. Geburtsh. u. Gynäk. 111: 121-153, 1940.

temperature record is not a substitute for any other commonly performed study: it is an adjunct.

In order to secure good records I have found it most helpful to have 8½ by 11 inch forms printed on grid paper. Two sheets are furnished each patient. One blank form is for the patient's use in drawing a graph;

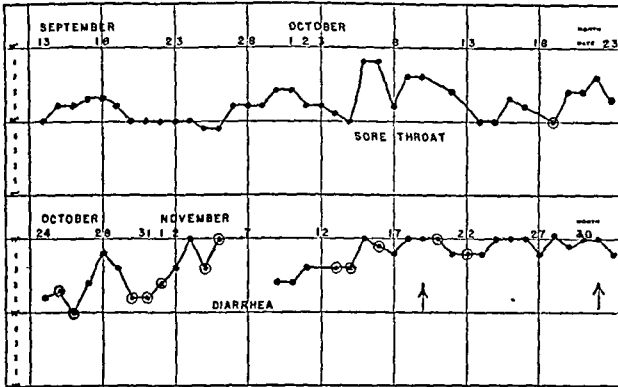


Chart 3.—Use of temperature graphs in sterility study of a patient with amenorrhea attributed to premenopausal changes. The patient was a nulligravida aged 42, married in March 1943. Menstruation had occurred "regularly every month" previous to 1943. The last periods were dated December 1942, March 9, 1943, May 25 and July 15. At the first consultation on Sept. 9, 1943 it appeared that the problem was to detect and take advantage of any subsequent ovulation which might occur. Both the patient and I felt that the menopause was beginning. The temperature graph shown here was commenced on September 13. No variations in temperature which suggested ovulation occurred until late October, nor did menstruation develop. On September 15 and again on October 15 a thin stain appeared, but this seemed at the time to be due to coital trauma rather than to menstruation. I believe the question cannot be answered with certainty. Since the graph for the first thirty five days showed no temperature rise which could be construed as indicating ovulation, the patient was instructed to have intercourse when the temperature reached its lowest point and to record the fact by encircling the temperature notation. This she did, beginning October 19. Study of the graph reveals an interest in recreation as well as in procreation. However that may be, the sustained high temperature on November 19 (first arrow) suggested that conception had occurred. Pelvic examination on November 23 was indeterminate, but the Friedman test was positive on December 1 (second arrow). Pregnancy is proceeding normally.

the other sheet contains instructions and, on the reverse, an example of a properly drawn graph. These forms have provided excellent records which are easily read both by the physician and by the patient. Moreover, they have increased the patient's understanding of the problem and aroused her interest in it. I strongly recommend the use of forms.¹⁶ In this work it is essential to secure good graphs, and these are not forthcoming until the patient has a clear idea of what is wanted, and why. It will not suffice for the physician

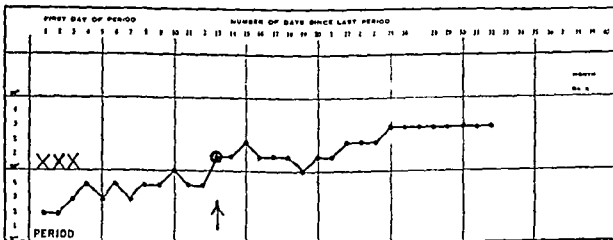


Chart 4.—Successful artificial insemination timed by the graphic method. Periods very regular, twenty eight to thirty days. Artificial insemination had been unsuccessfully attempted on two previous occasions on the 14th day before the expected period. As the graph shows, fruitful insemination (arrow) occurred fifteen to seventeen days before the period was due. Note the sustained elevation of temperature, which is typical of early pregnancy. Pregnancy has progressed to the fifth month uneventfully.

to instruct the patient orally or to tell her to "write down the temperature every day" or to "draw a graph." A list of figures is not sufficiently meaningful to patient

or doctor; from the practical standpoint it is essential to plot the data as a graph. Further, the graph must be planned so that the temperature variations are readily apparent. Before proper forms were printed, patients would present neat graphs plotted precisely but showing the temperature curve as an almost straight line or sometimes as an apparently hectic fever. Not until I had laboriously rescaled and replotted such a graph could it be read. The whole purpose of this report is to show how simple it is to secure and read temperature graphs, and the secret of the method (which is no secret) is to give the patient proper graph paper forms and complete written instructions. The instructions to the patient follow; remarks contained in the brackets do not appear on the sheet which the patient receives:

Conception is most likely to occur if intercourse takes place at approximately the time when the ovum is released from the ovary (ovulation). In most women ovulation occurs about fourteen days before menstruation, but this may not always be the case. It is particularly difficult for patients whose menstrual interval varies considerably from month to month to calculate the date of ovulation. Fortunately it is often possible to determine the probable time of ovulation (and hence the time when intercourse is most likely to result in conception) by a simple method.

Theoretically the normal temperature of a healthy person is 98.6 F. Actually there are continual slight variations from this figure. It has been found that woman's temperature is

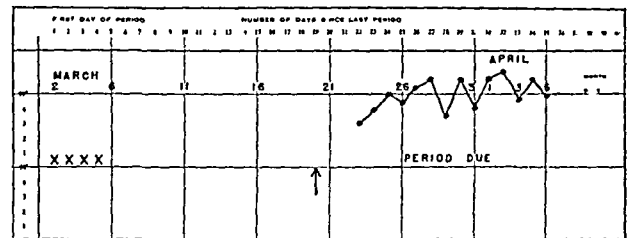


Chart 5.—Use of temperature records as an aid in the early diagnosis of pregnancy. The patient, a nulligravida aged 24, had been studied and treated by Dr. Douglas Krumbhaar of Boston because of sterility. When she moved to Philadelphia in March 1943 Dr. Krumbhaar requested that an endometrial biopsy be taken in the last week of the menstrual month. The cycle was 24/5. Since the previous periods occurred on February 4 and March 2, and the next period was expected March 26, the patient reported for biopsy on March 20 (arrow). I thought she might already be pregnant and by telephone obtained Dr. Krumbhaar's consent to deferment of the biopsy. The patient began a graph, which promptly revealed the high temperature level typical of pregnancy. The tentative diagnosis of pregnancy was confirmed when the period was missed. Allowing for the twenty-four day cycle, term was calculated as December 5. The patient was delivered uneventfully by Dr. Krumbhaar on Nov. 28, 1943.

lower during the first part of the menstrual month than it is during the last weeks of the month, and further, that the transition from a low level to a higher level occurs about the time of ovulation. It is therefore possible by keeping a graphic record of the body temperature to identify, in many cases, the date of ovulation. The variation in temperature is slight, only a few fifths of a degree, so it is essential that the temperature be taken with the utmost practical accuracy. In utilizing the temperature method for determining the date of ovulation the following rules are to be observed:

1. Take the temperature rectally with a blunt tip rectal thermometer for five minutes by the clock immediately after waking in the morning and before arising, eating, drinking or smoking (!). [Some investigators advise that the temperature be taken at the same hour each morning. I myself would prefer to have the temperature recorded when the patient wakes up in the belief that a more significant figure is recorded at 10 a. m. on a Sunday morning after a gay evening than at 7 a. m. when the patient has only had three or four hours' sleep.]

2. Note the temperature immediately by a dot on the graph. If the temperature so recorded differs much from previous readings, and particularly if it is lower than previous readings, the thermometer should be shaken down and reinserted for an additional five minutes by the clock and the reading checked before it is recorded permanently.

3. Any recognized cause for temperature variation should be noted on the chart, for example, a cold, grip, indigestion or even a hangover.

4. Some women can detect ovulation by noting a twinge of pain low on one side of the abdomen. Others have a drop or two of vaginal bleeding at the time of ovulation. If either of these manifestations is present, note it on the chart on the day of occurrence.

5. Chart the temperature by means of a small dot. If intercourse has taken place in the previous twenty-four hours, encircle the dot.

6. It is not essential to take the temperature during menstruation. Mark the first day of menstruation at the extreme left of the chart and commence a new graph when the flow has diminished. [In general I have not found it necessary to secure the temperature during menstruation, although potentiometer studies are reported to have shown that ovulation may occur during menstruation. If the graph gives no indication of ovulation between periods, then of course it would be wise to secure the temperature during every day of the month.]

7. It is necessary to continue the graph for at least two menstrual months before it is of much value. After this time it is usually possible to predict when the temperature will rise (ovulation). Sexual abstinence for several days before ovulation allows time for the male to store up sperm and probably increases the chance of fertilization.

8. If the temperature shows a rise of 2 or 3 fifths of a degree, and if this rise corresponds with a similar rise in the previous menstrual month and is not due to illness, then it can be assumed that ovulation is occurring and that intercourse is most likely to be fruitful. Intercourse oftener than once in twenty-four hours is probably unnecessary. [It is supposedly true that ovulation is indicated by the lowest temperature recorded. However, it is impossible to advise patients to have intercourse when the temperature is lowest, since it is impossible to determine in advance when the lowest point is reached. For this reason I have advised intercourse when the temperature shows a rapid rise.]

The accompanying charts show the sort of graphs drawn by patients, and the value of the graph is explained in each instance.

I believe that basal body temperature graphs very often indicate the date of ovulation. These graphs have been useful to me in suggesting to childless couples the time of maximum fertility, in determining the date for endometrial biopsies and in setting the date for artificial insemination in 2 cases, both of which were successful after previous failures. The graphs may also be used to detect the "unsafe period" for those who do not use contraceptive measures. In several cases an early correct "diagnosis" of pregnancy has been made before the pelvic findings or the Friedman test was positive. The method may be put to many other uses; for example, it should be helpful to investigators searching for very early ova.

In reviewing the literature I was struck by the fact that no one denies the usefulness of graphic temperature records. The method is doubted, but apparently without a fair trial. There is criticism on the grounds that the record of temperatures will not be accurate (but it is accurate enough to be useful) or that it is troublesome to secure (but nothing is too much trouble for the woman who wants a child) or that it is not as precise as hormone assays (but how much less expensive) or that electrical methods are more scientific (how many clinicians own potentiometers? ¹⁷ All of us have thermometers). In short, the method deserves more general use.

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THE DIURETIC EFFECT OF ASCORBIC ACID

PRELIMINARY REPORT ON ITS USE IN CARDIAC DECOMPENSATION

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OMAHA

The first reference in the English literature to the diuretic action of ascorbic acid was made in a study of normal persons without edema.¹ This had previously been described by German authors in the experimental animal and explained as a "polyphasic effect of ascorbic acid on the colloid osmotic pressure of the blood."² These observations have been applied to persons with edema from various causes; the present report concerns patients in cardiac decompensation.

The nutritional status of a person in respect to vitamin C can be estimated by his response to a test dose of ascorbic acid. The size of the dose varies with the route of administration, and the response, or amount of renal excretion, varies with the tissue vitamin content. If this substance is given by mouth there is almost complete absorption and the maximum rate of excretion normally occurs in three to six hours; if given by vein the maximum excretion is in one to two hours.³ Using either method, the rate varies inversely with the extent of tissue concentration.

It has been demonstrated that, regardless of the state of vitamin C reserve, a person can be saturated by a peroral dose of 3 Gm. of ascorbic acid in six days.⁴ The diuretic action corresponds to the period of saturation. This is usually on the third or fourth day if there is a normal reserve.⁵ If given parenterally, depending on the size of the intravenous dose, a person can be saturated in shorter time. But in this instance there is no appreciable diuretic effect, possibly because of too rapid excretion of ascorbic acid.⁶

CLINICAL STUDY

A series of 10 patients with peripheral edema were given a daily supplemental dose of 500 mg. of ascorbic acid by mouth in divided quantity.⁷ There were 5 men and 5 women, with an age distribution of 20 to 60 years, representing the common etiologic types of cardiac decompensation. Each patient remained in bed, received a standard hospital diet with a measured vitamin C content (50 mg. a day) and had a relatively stable fluid balance for three days prior to giving ascorbic acid. All were receiving a maintenance dose of digitalis, and no other diuretic was used during the six day period of study. The fluid intake was regulated at 1,500 cc. in twenty-four hours, and the urine output was recorded.

All patients had a small diuresis as determined by comparing the three day average output at the height of response (usually the third, fourth and fifth days) to the same period average before giving ascorbic acid. The actual increase was from 250 cc. to 1,000 cc. in seventy-two hours, not as great as expected, based on observations of normal subjects. The results corre-

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2. Fliednerbaum, J., and Tislowitz, R.: Untersuchungen ueber den Einfluss der Vitamine auf die Wasseraffinität des Blutes, *Ztschr. f. d. ges. exper. Med.* 97: 121, 1935.

3. Hawley, E. E., and Stephens, D. J.: Rate of Urinary Excretion of Test Doses of Ascorbic Acid, *Proc. Soc. Exper. Biol. & Med.* 34: 854, 1936.

4. Vauthey, M.: A Test for Vitamin C Deficiency, *Lancet* 1: 695, 1939.

5. Shaffer, C. F.: Unpublished observations in normal subjects. Abbasy.¹

6. Shaffer.³

7. Methylglucamine ascorbate was supplied by Abbott Laboratories.

sponded in general to those reported by Evans⁸ in a similar series of patients. He concluded that ascorbic acid was a more effective diuretic than digitalis but less effective than the adjuvant diuretics commonly used.

Another 10 patients with edema were given a daily supplement of 500 mg. up to 3 Gm. by vein, using the same control procedure, without appreciable diuresis.

The remaining alternative was to give a combination of diuretics. Since, as a whole, the mercurials are most effective for the release of edema of cardiac origin, ascorbic acid was added to mercupurin (500 mg. to 2 cc.). Each of this series of 20 patients had received at least one injection of mercupurin before being given the combination.

Three fourths, or 15 patients, had a relatively large diuresis of from one-half to two and one-half times greater than when mercupurin was used alone, as determined by comparing the first day output in each instance. The actual increase was from 500 cc. to 2,000 cc. in twenty-four hours. A smaller output was noted in 5 patients. In 2 of these mercupurin by itself had caused no significant diuresis, and 2 others had previously received supplemental vitamin C by mouth. It was noted that in patients wherein edema reaccumulated there was a progressively smaller response to injection of the combination at regular three day intervals. This was due in major part to a decreasing amount of fluid available for release and probably in part to increasing tissue saturation with vitamin C.

COMMENT

In animal experiments the blood colloid osmotic pressure determined by Govaerts' method subsequent to injection of ascorbic acid was usually increased but occasionally decreased or unaltered. Repeated daily injection caused a total increase but no cumulative effect. From these results it was concluded that this substance influenced osmotic pressure by a polyphasic mechanism.²

In additional experiments the blood plasma carbon dioxide combining power subsequent to injection was uniformly increased.⁹ This observation, also made in both of my series of patients experiencing a diuresis, is in direct contradistinction to an effect that acid-producing salts have in potentiating the mercurial diuretics.

SUMMARY

Ascorbic acid given by mouth resulted in a small diuresis in 10 patients with cardiac decompensation. When given by vein there was no appreciable similar effect. In combination with mercupurin there was a relatively large diuresis of from one-half to two and one-half times greater than with mercupurin alone.

The diuresis caused by ascorbic acid, based on studies in the experimental animal, is believed due to altered colloid osmotic pressure. It is not due to production of acidosis.

1418 Medical Arts Building.

8. Evans, W.: Vitamin C in Heart Failure, *Lancet* 1:308, 1938.

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HEALTH HAZARDS ENCOUNTERED IN THE MANUFACTURE OF SYNTHETIC RUBBER

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The manufacture of synthetic rubber involves several chemical compounds which are toxic to man. A summary of the health hazards involved in the manufacturing process is warranted, as great quantities of synthetic material are being made.

This paper deals with experiences encountered in the manufacture of certain types of synthetic rubber. Sufficient time has not elapsed to enable these observations to be supported by comprehensive figures.

The principal chemicals used in the manufacture of synthetic rubber are (1) butadiene, which is also known as methyl allene and has a chemical formula of $\text{CH}_2:\text{CHCH}:\text{CH}_2$, (2) styrene, also known as vinyl

benzene, having the chemical formula  $\text{CH}:\text{CH}_2$, and (3) acrylonitrile, or acrylonitril-vinyl cyanide, which has a chemical formula of $\text{CH}_2:\text{CH-CN}$. In addition to these chemicals, polymerization catalysts such as hydrogen peroxide, sodium perborate, ammonium persulfate or organic peroxides or peracids and modifying agents—such as carbon tetrachloride, hexachloroethane, organic halogen compounds, trichloropropionitrile, sodium cyanide, mercaptans, xanthogen disulfides, thiuram disulfides and sulfinic acid are used. The chemistry of these groups of compounds has been fairly well described by various authors and will not be discussed here, since we are primarily interested in the hazards encountered in handling them.

I observed that workmen exposed to butadiene vapors complained of irritation of the eyes, nasal passages, throat and lungs. In some instances coughing was produced. A sense of fatigue and drowsiness developed in some. In all cases these symptoms disappeared on removal from the fumes. Subsequent exposures caused the same symptoms, but these did not appear to be exaggerated, indicating no cumulative action. All workmen who complained of symptoms were immediately examined. Physical examinations, including chest x-ray examinations, blood examinations and urinalyses, were all negative. Follow-up examinations were also negative. No skin effects were noted. No workmen were exposed to heavy concentrations of the fumes.

Styrene, because its chemical structure is similar to toluene, was primarily considered to be as toxic as toluene. This did not prove to be the case.

No workmen in my experience were exposed to concentrations of styrene over 500 parts per million. The presenting symptoms were irritation of the nose, throat and lungs. Coughing occurred in some cases. A mild conjunctivitis occurred in some cases. A feeling of lassitude and fatigue occurred in all cases. In several cases in which the skin came into contact with styrene, the skin was rough, dry and cracked. This was probably due to the styrene dissolving the natural oils of the skin.

Whenever workmen were exposed to styrene fumes and complained of toxic effects they were sent to the hospital for examination. In addition to a complete physical examination they also received a complete blood count, urinalysis and a chest x-ray examination.

At no time was any pathologic condition noted. Some of these workmen were observed for over a period of at least one year, and no chronic or cumulative effects were noted.

Liver or kidney damage might be expected to occur following exposure to high concentrations of styrene vapors. No pathologic change of this type was seen.

Acronitrile, because it contains vinyl cyanide and liberates hydrogen cyanide, is definitely a source of danger. It presents definite hazards of vapor toxicity and of toxic absorption. Every care was taken to prevent human exposure. In spite of all precautions, some workmen were exposed to mild concentrations. These workmen presented symptoms of nausea, vomiting and weakness. Headache, fatigue and diarrhea also occurred in some. All complained of nasal irritation and an "oppressive feeling" in the upper respiratory passages.

In several cases a mild jaundice appeared which lasted for several days. In 1 case severe jaundice appeared which did not disappear until four weeks had elapsed. The jaundice was accompanied by varying degrees of headache, prostration, nausea, vomiting, diarrhea and tenderness in the abdomen. In the mild cases without jaundice no physical signs were noted except occasional liver tenderness. All types of laboratory examinations were negative. In the more severe cases, that is, those in which jaundice was present, the blood icterus index varied with the degree of jaundice. Usually a low grade anemia appeared with the hemoglobin averaging 13 Gm. per hundred cubic centimeters of blood, the red blood cell count averaging 4,000,000 per cubic millimeter and the white blood cell count being slightly elevated, averaging 12,000 per cubic millimeter. The differential count was usually normal.

Analysis was usually normal except for an increased bile content. Stools were light in color. With treatment all cases returned to normal with the exception of the case of severe jaundice. In this case, after one year's time, lassitude and fatigue were still complained of, although no pathologic physical signs remained.

Fortunately no fatal cases occurred. This was probably due to the extreme care used in the handling of the chemical, thus avoiding lethal concentrations of the compound. As already stated, there is no question that sufficient exposure either to the vapor or through skin absorption would cause death.

The toxicity of the other chemicals used in the compounding of synthetic rubber is sufficiently known not to warrant their discussion here. Suffice it to say that they do possess toxic qualities sufficient to be a health hazard in themselves.

Several workmen permitted several types of synthetic elastic to be placed on their skin for a period of seven days. No reactions occurred.

TREATMENT

Exposure to any one of the aforementioned compounds is a serious thing. During the process of combination they still retain and perhaps enhance their toxic properties. As a matter of fact, most of the patients could easily have had exposure to several of the compounds simultaneously. Therefore all workmen were given a complete physical examination whenever one presented himself to the hospital. It was made a standard rule for all supervisors to send all exposed workmen to the hospital immediately. A complete laboratory examination was made, including a complete blood count, a blood icterus index and a urinalysis.

Chest x-ray examinations were also made routinely. If any pathologic change was noted the employee was immediately hospitalized. In any event he was sent home and not permitted to return to work until several days had elapsed, during which time he was kept under observation with repeated physical and laboratory examinations. Treatment was entirely symptomatic. Lacrimal irrigations, liquid petrolatum instillations in the nasal passages and small doses of acetylsalicylic acid for discomfort were given. Rest and fresh air were prescribed to all. A light diet was recommended. All of the jaundiced employees were hospitalized, and they were given intravenously 1,000 cc. of 5 per cent dextrose solution daily. Liquids were forced. Liver and iron was given, 12 capsules daily. A multiple vitamin capsule was given three times daily. The liver and iron and vitamin capsules were continued for several months after the patient became ambulatory. Length of bed rest varied from three to ten days. All patients were kept in bed until the jaundice and abdominal tenderness disappeared.

PRECAUTIONS

In my opinion the following general precautions should be observed in all plants manufacturing synthetic rubber:

1. A complete preemployment physical examination for all workmen including a complete blood count, urinalysis, blood icterus index, blood Kahn or Wassermann test and a chest x-ray examination. Evidence of chest, liver or kidney disease, syphilis or pregnancy should preclude employment.

2. All operating personnel should be examined every three months, this examination to include a complete blood count, urinalysis, blood icterus index and a chest x-ray examination. Evidence of organic pathologic change should be reason for immediate removal from the job.

3. All operating personnel should be impressed with the toxic hazards of the various compounds and taught to handle them properly.

4. A closed type of operation should be made mandatory. Continuous inspection of all equipment for possible leaks should be enforced.

5. A set of safety rules regarding the use of protective equipment (gloves, goggles, masks) should be posted at the danger spots.

6. Both personal and group safety equipment should be supplied as needed.

7. Adequate ventilation, both local and general, should be maintained at all times.

SUMMARY

1. Butadiene is a light narcotic poison with no apparent danger to light exposures.

2. Styrene is to be considered as a toxic compound. Mild exposures do not produce any pathologic effects. Heavy exposures may cause permanent damage, but so far this has not occurred.

3. Acrylonitrile is extremely toxic both from vapor toxicity and from toxic absorption. Even mild exposures are dangerous.

4. Other compounds used in the manufacture of synthetic rubber are to be considered to be toxic and precautions taken in their handling.

5. Treatment of exposed cases is chiefly symptomatic.

6. All operating personnel should receive thorough preemployment examination and a complete periodic check-up every three months.

7. Adequate ventilation is to be supplied at all times.

8. Constant inspection of all equipment should be maintained.

9. Personal and group safety equipment should be supplied and their use enforced.

Clinical Notes, Suggestions and New Instruments

MENINGOCOCCIC CONJUNCTIVITIS

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CORPS, AND CAPTAIN LEWIS H. BRONSTEIN, MEDICAL
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When gram negative intracellular and extracellular diplococci are demonstrated in a smear from the conjunctiva showing purulent conjunctivitis, the presumptive diagnosis of gonorrheal ophthalmia is almost universally made. Except in rare cases it has not been considered necessary to make detailed bacteriologic or serologic studies of the organisms found. This attitude may have been due in the past to difficulties in culturing the neisserian organisms and in their serologic identification. This is no longer a legitimate excuse, since in recent years cultural and serologic identification of these organisms has become quite a simple matter.

The case that brought to our attention the necessity of doing such studies was that of a 2 year old child who was brought to the Station Hospital on Dec. 6, 1943 because of a purulent conjunctivitis of the right eye. He was taken immediately to the laboratory and a smear was made on the exudate from the conjunctiva. It showed the presence of numerous intracellular and extracellular gram negative diplococci. Because of this report and the intense conjunctivitis, with the sac full of pus, the Eye Service advised admission to the hospital for adequate therapy. The child was accordingly admitted to the Contagious Disease Service.

The history, obtained from the mother, revealed the fact that the child had coryza on December 4. On the morning of December 5 it was noticed that his right eye had become inflamed. This condition grew worse, and frank pus oozed from the conjunctiva that afternoon. His admission to the hospital was advised on the morning of December 6. Examination was completely negative except for a temperature of 99.6 F. and the presence of a purulent conjunctivitis of the right eye. Because of the laboratory report he was placed on sulfathiazole by mouth and irrigations of the conjunctival sac with boric acid solution. At the start it was necessary to irrigate the eye about every fifteen minutes to remove the exudate, but the time interval was soon increased.

The laboratory, in the meantime, had made a culture by rubbing the fresh swab of exudate on the surface of a "chocolate" agar plate, as previously described by one of us.¹ The following day the abundant growth of "oxydase positive" gram negative diplococci was washed from the chocolate agar plate and typed by the method described by Phair, Smith and Root.² The organisms were agglutinated with type I meningococcus antiserum and failed to agglutinate with types II or III meningococcus antiserum or gonococcus antiserum.

This report was telephoned to the ward on December 7, the second hospital day. The eye was much improved, and sulfathiazole therapy was continued. The contemplated search for the source of infection was, however, discontinued. The next day there was no longer any purulent discharge and the child

was discharged from the hospital. The highest recorded temperature was 99.6 F. by rectum. At no time was there any evidence of systemic infection.

COMMENT.

The finding of *Neisseria intracellularis* in acute suppurative conjunctivitis in the absence of any clinical signs of meningococcal infection of other tissues seemed to us to be unusual and to have far-reaching possibilities. We looked through three standard textbooks of ophthalmology and found that May's *Diseases of the Eye*³ does not mention the meningococci as a cause of conjunctivitis. Parsons⁴ merely states that it is sometimes found in the conjunctival sac. Duke-Elder's⁵ monumental work has much more on the subject. He mentions a catarrhal conjunctivitis as occurring as an acute metastatic phenomenon of meningococcal infection. He quotes some literature to show that it may occur without general symptoms and that Reese reported a case of meningitis which followed a conjunctival infection. He cites one report in which it caused a pseudomembranous conjunctivitis with corneal ulceration but does not mention whether or not meningitis was associated with it.

A survey of recent literature reveals that meningococcal conjunctivitis associated with infection of other tissues is not uncommon. It is, however, quite rare in the absence of such involvement. Clifton and Laird⁶ report 2 cases, in 1 of which a group I meningococcus was proved to be the etiologic agent. In the other, similar proof, cultural and serologic, is lacking, but it is assumed to be identical on the basis of its clinical similarity to the first. These authors in reviewing the literature cite only 3 other cases of meningococcal conjunctivitis in the absence of other symptoms. A fourth case is mentioned by DeBord⁷ in a man in which a group I meningococcus was isolated. It is not clear, however, whether other tissues were involved by the meningococcus.

The recent studies on meningococcus "carriers" and their control by Schoenbach⁸ and Cheeves, Breese and Upham⁹ show the widespread and common occurrence of meningococci in "normal" throats. Duke-Elder¹⁰ mentions the presence of meningococci in the conjunctivas of such carriers. These facts suggest the great possibility for infection of the eye with these organisms and indicates the fallacy of reporting gonococci from smears from acute purulent conjunctivitis without cultural and serologic confirmation. In our hands the use of the chicken serum² for such agglutination has been very satisfactory and has led to complete identification within twenty-four hours of the time that the gram negative diplococcus was grown.

The necessity for such identification is quite apparent in those cases in which there is no obvious method of spread of infection as from a urethritis, vaginitis in a child or cervicitis. Before further energy is spent in search for the contact, such identification should be undertaken.

In all the cases that have been adequately described, as well as our own, a respiratory infection was the mode of onset. While this might be a clue, it is at most a very tenuous one. It might, however, help in the type of case mentioned (no obvious source of contamination) to consider the possibility of the meningococcus as the gram negative intracellular diplococcus when it is found.

CONCLUSION

The diagnosis of meningococcal conjunctivitis should be suspected in cases with gram negative intracellular diplococci seen in smears of pus in which no obvious source of the infection is discernible.

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INSULINS AND INSULIN MODIFIERS

INTRADERMAL STUDIES

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In their respective textbooks Joslin,¹ Wilder² and Duncan³ have stated that injections of protamine zinc insulin are more apt to produce cutaneous reactions than regular insulin.

During an experience of seven years we have found that globin insulin (with zinc) has only rarely been followed by cutaneous reactions. Bauman⁴ found that several patients who had severe skin reactions after injections of protamine zinc insulin obtained immediate relief when globin insulin (with zinc) was substituted. Duncan⁵ replaced protamine zinc insulin with globin insulin (with zinc) in 2 patients and noted a disappearance of the irritation of the skin. In the article published by Bailey and Marble⁶ local reactions were not encountered when globin insulin (with zinc) was used.

As the question of sensitivity to insulin is of some practical importance and because we wanted to see if the results of cutaneous tests with uncombined protamine and globin would parallel the clinical experience with the respective insulin combinations, we tested a group of 91 allergic and 81 diabetic nonallergic patients with various insulins and insulin modifiers. All of the diabetic patients had received therapeutic injections of one or more types of insulin.

SOLUTIONS EMPLOYED

Protamine.—The same product as is used in the preparation of protamine zinc insulin was used. It is obtained from the sperm of the fish belonging to the salmonidae family.

Total Globin (beef).—Though globin contains considerable arginin and histidine, it is a neutral protein more like an albumin than a protamine or histone (Bauman⁷). Total globin was prepared from beef hemoglobin according to the method of Anson and Mirsky.⁸

Native Globin Beef.—Native globin was prepared from total globin (beef) by neutralization of its solution with alkali. The matured globin precipitates, leaving the native globin in solution. Native globin (beef) is used in the preparation of globin insulin (with zinc) (Reiner, Searle and Lang⁹).

Globin (human).—Total globin from human hemoglobin was prepared according to the aforementioned method. Two sources were used and are designated in these studies as globin (human) A and B.

Insulin Beef (market).—Regular insulin, stated to be from beef pancreas, was purchased on the market. It was diluted so that there was 0.01 mg. of nitrogen per cubic centimeter. The average zinc content of regular insulin U-40 varies over a range of about 0.041 to 0.049 mg. per hundred cubic centimeters.¹⁰ This is approximately $\frac{1}{175}$ the amount of zinc present in protamine zinc insulin.

Crystalline Insulin.—We were especially desirous of obtaining an insulin that was as free from zinc as possible; hence the following process was employed. "Wellcome" brand of crystalline insulin was recrystallized once in phosphate buffer with zinc according to Scott and Fisher's method¹¹ and once

from ammonium acetate without the addition of zinc. Then it was dissolved in hydrochloric acid and dialyzed for six days; it was then precipitated at the isoelectric precipitation point and the precipitate dissolved again in hydrochloric acid and dialyzed for two days and finally electrodyalyzed until completely precipitated. This was then dissolved in sufficient hydrochloric acid to form a clear solution. Determinations of zinc were carried out according to the method described by the Council on Pharmacy and Chemistry of the American Medical Association¹² and the results were negative.

Insulin (p-azobenzyltrimethylammonium chloride).¹³—This insulin compound was prepared from Wellcome brand crystalline insulin according to the method described by Reiner and

TABLE 1.—Results of Intradermal Studies on Nondiabetic and on Diabetic Patients Using Various Test Solutions*

Test Solution (0.01 Mg. N/Cc. 0.02 Cc. Intradermally)	Nondiabetic Patients (91 Tested) Positive Reactions, %	Diabetic Patients	
		Patients Tested, No.	Positive Reactions, %
Protamine	48.3	81	18.5
Native globin (beef) ..	2.1	81	2.4
Globin (human) A	0	81	2.4
Globin (human) B	4.2	81	1.2
Total globin (beef)	1.0	81	1.2
Acid control	6.4	81	1.2
Zinc chloride control	75.6	81	41.9
Insulin beef (market) ..	3.2	81	24.6
Crystalline insulin (recrystallized, zinc free) .....	..	62	4.8
Insulin (p-azobenzyltrimethylammonium chloride) ¹³ .....	..	61	10.0
Insulin (p-azobenzenesulfonic acid) ¹³ ..	..	61	3.0

* Seventy-two of the diabetic patients had had protamine zinc insulin therapy and 33 had had globin insulin therapy previous to the studies of cutaneous reactions.

TABLE 2.—Comparison of Reactions of Patients Receiving Protamine Zinc Insulin and Globin Insulin with Zinc*

Test Solution (0.01 Mg. N/Cc. 0.02 Cc. Intradermally)	Protamine Zinc Insulin			Globin Insulin (With Zinc)		
	Patients Tested, No.	Positive Reactions No.	%	Patients Tested No.	Positive Reactions No.	%
Protamine	72	14	19.3	33	9	27.5
Native globin (beef) ..	72	2	2.6	33	1	3.0
Globin (human) A	72	2	2.6	33	2	6.0
Globin (human) B ..	72	1	1.4	33	1	3.0
Total globin (beef) ..	72	1	1.4	33	1	3.0
Acid control ..	72	1	1.4	33	1	3.0
Zinc chloride control ..	72	29	40.2	33	15	45.4
Insulin beef (market) ..	72	20	26.3	33	9	27.5
Crystalline insulin (recrystallized, zinc free)	57	3	5.2	29	2	6.9
Insulin (p-azobenzyl- trimethyl ammonium chloride) ¹³	56	6	10.7	28	1	3.6
Insulin (p-azobenzenesulfonic acid) ¹³ ..	56	2	3.5	28	0	0

* In this table the diabetic patients have been divided into two groups, those who received protamine zinc insulin or globin insulin (with zinc) therapy previous to the intradermal studies.

Lang.¹⁴ It was crystallized according to the method described by Lang and Reiner,¹⁵ electrodyalyzed and reprecipitated.

Insulin (p-azobenzenesulfonic acid).¹³—This insulin compound was prepared from highly purified and zinc free insulin previously described. The dye was prepared according to the method of Reiner and Lang.¹⁴

Acid Control.—This solution was prepared from potassium acid phosphate and had a *pH* similar to that of globin insulin (with zinc), which is about 3.5.

¹² New and Nonofficial Remedies, Chicago, American Medical Association Press, 1941.

¹³ Kern, R. A., and Langner, R. H., Jr. Protamine and Allergy, J. A. M. A. **113**: 198 (July 15) 1939.

¹⁴ Reiner, L., and Lang, E. H.: Insulin Azo Derivatives, J. Biol. Chem. **139**: 64, 1941.

¹⁵ Lang, E. H., and Reiner, L.: Crystalline Insulin Derivatives, Science **93**: 401, 1941.

From the Department of Medicine, Presbyterian Hospital and Columbia University.

Dr. Franklin Stevens of the allergy clinic cooperated in this study, and Miss Agnes Shuford, R.N., performed the cutaneous tests.

1. Joslin, E. P.: *Treatment of Diabetes Mellitus*, Philadelphia, Lea & Febiger, 1940.

2. Wilder, R. M.: *Clinical Diabetes Mellitus and Hyperinsulinism*, Philadelphia, W. B. Saunders Company, 1940.

3. Duncan, G. G.: *Diseases of Metabolism*, Philadelphia, W. B. Saunders Company, 1942.

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10. Information supplied by E. R. Squibb & Sons.

11. Scott, D. A., and Fisher, A. M.: CXXXI Crystalline Insulin, *Biochem. J.* **29**: 1048, 1935.

Zinc Chloride Control.—This solution contained 0.5 mg. of zinc chloride per cubic centimeter, so that the amount given as a test dose (0.02 cc.) contained 0.0048 mg. (4.8 micrograms) of zinc. This amount of zinc would correspond to the zinc present in 2.4 units of protamine zinc insulin (80 units of protamine zinc insulin contains approximately 0.15 mg. of zinc).

COMMENT

The results of this study are presented in the accompanying tables. Of the preparations tested, zinc chloride, beef insulin and protamine were the most irritating. The incidence of sensitivity to protamine was much greater in the allergic patients. In this group reactions to protamine were twenty-four times more frequent than to globin. In the nonallergic diabetic group the number of reactions to protamine was less, possibly because some of these persons had received injections of protamine zinc insulin and were desensitized. However, here too the ratio of protamine reactions to globin reactions was more than 7.5 to 1.

These results are in keeping with those of the toxicity studies of Reiner, deBeer and Green,¹⁶ who found that globin was devoid of toxicity when injected into animals or tested on tissues or monocellular organisms, whereas protamine was toxic both to tissues and to trypanosomes. The globin and protamine sensitization experiments of Reiner, Searle and Lang indicated that globin and globin insulin (with zinc) were only weakly antigenic, and this observation is confirmed by our experience with human diabetic patients.

The irritating effect of zinc chloride was to be expected. In the diabetic group the frequency of reactions to beef insulin was five times greater than to the purified substance. We are at a loss to explain this result.

CONCLUSIONS

1. Cutaneous reactions to protamine are more frequent than to globin in allergic and in nonallergic patients.
2. Diabetic patients receiving injections of protamine zinc insulin become desensitized to protamine.
3. Diabetic patients to whom globin insulin (with zinc) had been administered daily for about five years were not sensitive to globin.

630 West 168th Street.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

ALLERGENIC PREPARATIONS (See New and Non-official Remedies, 1943, p. 29).

The following dosage forms have been accepted.

REICHEL LABORATORIES, INC., KIMBERTON, PA.

Protein Extracts Diagnostic: These extracts for the diagnosis of protein sensitivity by the intracutaneous method are supplied in 1 cc. size cartridge ("Tubex") vials containing sufficient protein material of appropriate dilution for twenty to thirty tests. The test sets are accompanied by a suitable cartridge syringe, sterile needles and three cartridge vials each of epinephrine hydrochloride solution, buffered saline solution and distilled water. After injection of each extract the needle should be flushed with distilled water to avoid contamination with the extract used previously.

Extracts marketed in dilution representing 0.05 mg. of nitrogen per cubic centimeter:

Apple,³ Apricot,³ Banana,³ Blackberry,³ Cantaloupe,³ Cherry,³ Dates,³ Fig,³ Grape,³ Grapefruit,³ Lemon,³ Orange,³ Peach,³ Pear,³ Pineapple,³ Plum,³ Prune,³ Raspberry,³ Strawberry,³ Watermelon,³ Beef,³ Chicken,³ Mutton,³ Pork,³ Artichoke,³ Asparagus,³ Beets,³ Broccoli,³ Cabbage,³ Carrot,³ Cauliflower,³ Celery,³ Cucumber,³ Endive,³ Garlic,³ Green Pea,³

Leeks,³ Lentil,³ Lettuce,³ Mushroom,³ Olive,³ Onion,³ Parsley,³ Pepper (Green),³ Potato (Sweet),³ Potato (White),³ Pumpkin,³ Radish,³ Rhubarb,³ Spinach,³ Squash,³ Tomato,³ Turnip,³ Watercress.³

Extracts marketed in dilutions representing 0.01 mg. of nitrogen per cubic centimeter:

Goat Hair,⁵ Wool,⁵ Chicken Feathers,⁵ Duck Feathers,⁵ Goose Feathers,⁵ Alfalfa (Hay),⁴ Rice Powder,⁴ Coffee,⁴ Tea,⁴ Bran,⁴ Corn (Sweet),⁴ Oats,⁴ Rice,⁴ Rye,⁴ Wheat,⁴ Milk (Cheeses),⁴ Lactalbumin,⁶ Bay Leaves,⁴ Cinnamon,⁴ Clove,⁴ Ginger,⁴ Nutmeg,⁴ Thyme,⁴ Hops,⁴ Kidney Bean.⁴

Extracts marketed in dilutions representing 0.005 mg. of nitrogen per cubic centimeter:

Cocoa (Chocolate),⁴ Lima Bean,⁴ Navy Bean,⁴ Pea,⁴ Soy Bean,⁴ String Bean,⁴ Brazil Nut,⁴ Cashew Nut,⁴ Chestnut,⁴ Hazel Nut,⁴ Hickory Nut,⁴ Pecan,⁴ Pistachio.⁴

Extracts marketed in dilutions representing 0.001 mg. of nitrogen per cubic centimeter:

Camel Hair,⁵ Cat Hair,⁵ Cow Hair,⁵ Dog Hair,⁵ Horse Hair,⁵ Horse Hair,⁵ Rabbit Hair,⁵ Silk,⁵ Cotton Seed,⁴ Kapok Seed,⁴ Orris Root,⁴ Pyrethrum,⁴ Tobacco,⁴ Flaxseed,⁴ Barley,⁴ Almond,⁴ Coconut,⁴ Peanut,⁴ Walnut (English),⁴ Bass,⁴ Bluefish,⁴ Carp,⁴ Clam,⁴ Cod,⁴ Crab,⁴ Flounder,⁴ Haddock,⁴ Halibut,⁴ Herring,⁴ Lobster,⁴ Mackerel,⁴ Oyster,⁴ Perch,⁴ Pike,⁴ Salmon,⁴ Sardine,⁴ Scallop,⁴ Shad,⁴ Shrimp,⁴ Smelt,⁴ Sole,⁴ Trout,⁴ Tuna,⁴ Anise Seed,⁴ Caraway Seed,⁴ Yeast,⁴ Orchard Grass,⁴ Sweet Vernal Grass,⁴ June Grass,⁴ Sagebrush,⁴ Wormwood,⁴ False Ragweed,⁴ Western Ragweed,⁴ Timothy,⁴ Red Top,⁴ Plantain,⁴ Ragweed,⁴ Giant Ragweed,⁴ Cocklebur,⁴ Bermuda Grass,⁴ Johnson Grass,⁴ Russian Thistle,⁴ Ash (White),⁴ Ash (Oregon),⁴ Alder,⁴ Beech,⁴ Birch,⁴ Elm,⁴ Hickory,⁴ Maple,⁴ Oak,⁴ Poplar,⁴ Sycamore,⁴ Walnut,⁴ Beaver,⁵ Caracul,⁵ Ermine,⁵ Fox,⁵ Lamb (Black),⁵ Lamb (Persian),⁵ Leopard,⁵ Mink,⁵ Muskrat,⁵ Nutria,⁵ Rabbit,⁵ Raccoon,⁵ Skunk,⁵ Seal,⁵ Squirrel,⁵ Weasel.⁵

Extracts marketed in dilutions representing 0.0005 mg. of nitrogen per cubic centimeter:

Egg (Chicken),⁷ Mustard,⁴ Glue (Fish).¹⁰

Extract marketed in dilutions of 1-10:

House Dust.⁸

Extract marketed in dilutions of 1-100:

Horse Serum.⁹

Protein extracts diagnostic Reichel are prepared from the various substances by extraction with a slightly alkaline, buffered saline solution composed of sodium chloride, 0.5 per cent, sodium bicarbonate, 0.275 per cent and phenol 0.4 per cent, in distilled water. Carbon dioxide is then bubbled into the extracts until they become colorless when tested to phenolphthalein. The products are standardized on the basis of their nitrogen content per unit volume (Kjeldahl method). Certain products, namely house dust and horse serum, not lending themselves to such standardization are therefore marketed in dilutions of 1-10 and 1-100 respectively.

Extracts marked 1 are prepared by the following method: The juices are squeezed and separated from pulp by filtration. The *pH* is adjusted to 7.4 with sodium carbonate, diluted with buffered alkaline saline solution, filtered, standardized and diluted to appropriate strength.

Extracts marked 2 are prepared by the following method: The crude material is ground as fine as possible. Alkaline buffered solution is added to the pulp and allowed to extract under toluene for from one to two days at room temperature. After the toluene has been removed in a separator the extract is filtered, standardized and diluted to appropriate strength.

Extracts marked 3 are prepared by the following method: After the removal of all fat and tendons, the muscle fibers are then ground as fine as possible. The ground material is washed with warm (50 C.) toluene until entirely free of fats. The toluene washings are discarded and the ground meats are extracted under toluene with alkaline buffered saline solution at room temperature for from one to two days. The toluene is then removed in a separator and the extract is filtered, standardized and diluted to appropriate strength.

Extracts marked 4 are prepared by the following method: The materials are ground as fine as possible, the powder or flour is washed with ether and toluene until the washings are clear and colorless. The washings are discarded and the residue is dried. The dried residue is extracted with alkaline buffered saline solution under toluene at room temperature for from one to two days. The extract is filtered through a Buchner funnel and the toluene removed in a separator. The extract is filtered, standardized and diluted to appropriate strength.

Extracts marked 5 are prepared by the following method: The materials are washed with ether and toluene, dried and extracted under toluene for from one to two days at room temperature. The extract is cleared of toluene in a separator, filtered, standardized and diluted to appropriate strength.

Lactalbumin, marked 6, is prepared by the following method: The casein is precipitated with rennin and the lactalbumin, after neutralization with sodium bicarbonate, is precipitated from the resulting whey with acetone. The lactalbumin is then extracted with alkaline buffered saline solution, filtered, standardized and diluted to appropriate strength.

Egg (Chicken), marked 7, is prepared by the following method: The white is separated from the yolk and diluted with alkaline buffered saline solution, filtered, standardized and diluted to appropriate strength.

House Dust, marked 8, is prepared by the following method: The dust is defatted with ether and toluene, dried, extracted with alkaline buffered saline solution, dialyzed, filtered and diluted to appropriate strength.

Horse Serum, marked 9, is prepared by the following method: Normal Horse Serum is treated with phenol, so that the final concentration of phenol is 0.4 per cent. It is then diluted to proper strength with alkaline buffered saline solution.

Glue (Fish), marked 10, is prepared by the following method: The glue is diluted in alkaline buffered saline solution, standardized and diluted to appropriate strength with alkaline buffered saline solution.

16 Reiner, L.; deBeer, E. J., and Green, M. Toxic Effects of Some Basic Proteins, *Proc Soc Exper. Biol & Med* 50:70, 1942.

THE JOURNAL OF THE
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SATURDAY, MARCH 11, 1944

WHAT THE PEOPLE THINK ABOUT
MEDICINE AND MEDICAL
SERVICE

In July 1943 the National Physicians Committee employed the largest opinion research group in this country to make a comprehensive study of the people's opinion about medical care. The results of that study have just been made available. In making this survey the National Physicians Committee has rendered a distinguished service to American medicine. The report should be of great help to medical leaders by pointing the way in planning for the extension of medical service. The report indicates the necessity for more education of the public regarding the issues involved in proposals for changing the nature of medical service. When people understand the issues, an overwhelming majority are unqualifiedly opposed to any such proposals as the Wagner-Murray-Dingell bill, which would establish federal control of medical practice. Even though the people sense the need for the extension of facilities designed to meet the costs of unusual or prolonged illness, only a small minority, as shown by this report, believe that compulsory sickness insurance would provide a satisfactory solution to the problem.

Many of the questions in this research concerned the personal experiences of the people with medical care as now provided in the United States. The replies, in great majority, indicated that the people are deeply conscious of the value of individualized service in the effectiveness of medical care, that they want complete freedom of choice in time of illness and that they believe choice would be limited and restricted by administration of medical care under the auspices of the federal government.

Out of this report came the conviction that many persons find difficulty in meeting bills for unusual or prolonged illness and desire to participate in plans or methods for insurance against the hazards of emergency illness. Already great numbers of people are familiar with the various prepayment plans for medical service

available throughout the country. The investigations extended into many communities in which such plans are operating and covered the experiences of the participants. To summarize the many questions asked on this phase of the report: Persons who participate in prepayment plans approve them; in every instance such persons believe they are better off than their neighbors who have no such opportunity; the doctors in areas where such plans are in operation believe that the people are better off because of the operation of the plan. More than 50 per cent of the doctors in such areas stated that it would be a good thing if all industries would operate prepayment medical and hospital service plans for their employees.

In a special survey, paralleling the study of medical service, opinion was sought concerning the American Medical Association. More than three fourths of the people who were questioned had heard of the American Medical Association, and about half of these defined its purposes with reasonable accuracy. In general, those who had heard of the American Medical Association expressed approval. The inquiry about the American Medical Association was made in the survey to determine the extent to which mention of the public education activities of the medical profession would tend to have a favorable or unfavorable influence on public thinking. The best evidence that the American Medical Association was considered a "favorable symbol" was the fact that most people think of the purposes of the American Medical Association as being "to sponsor new medical technics; to keep the standards of medical practice high; to give endorsement to acceptable medical products." Moreover, less than one tenth of the people interviewed thought of the American Medical Association as a "union" of physicians or as a "trust" or as being otherwise primarily a self-interested body.

The report of this survey, which is available through the National Physicians Committee, should do much to counteract the irresponsible and sometimes malicious criticisms that have been expressed recently within and without the medical profession. The scope and the accuracy of this survey cannot be questioned. The results are a challenge to medical leadership. Only through enlightened medical leadership can medical service and medical science continue to evolve in the United States beyond the high point that they have now attained. The advancement of medical science and of medical education is fundamental to the quality of medical service. Some of the proposals that have been made to federalize medical service, coming from outside the medical profession, would subsidize education and research. From within have come proposals to "unionize" or "commercialize" medical service. The professional status of medical care and medical science must be maintained. The economic factors involved in

securing wider distribution of medical service must be studied and the widest possible application of these services secured. But even the economics of medical service must always be dependent on the science, the art and the practice of medicine.

HYPERPLASIA OF THE PROSTATE

A morphologic study by Moore¹ of so-called benign hypertrophy of the prostate emphasizes that the terms "hypertrophied prostate" and "prostatectomy" do not convey the same idea to the specialist in the urologic field that they do to the general practitioner. The urologist has for some time been aware that the prostate that causes obstruction to urinary flow need not be hypertrophied; the operation he performs for the relief of urinary obstruction is not prostatectomy. The anatomic changes concerned, Moore points out, are nodular hyperplasia and not hypertrophy of the gland. Nodular hyperplasia, therefore, would be a preferable term. The nodules develop from the periurethral glands and also from some point in the prostate itself. Moore's histologic studies showed that the earliest nodules may be demonstrated in acini of the middle and lateral lobes of the prostate about the collicular and subtrigonal periurethral glands, all structures which empty cephalad to the verumontanum. In only 1 instance of 700 prostates examined by him was a nodule demonstrated in a posterior lobe which empties caudal to this point. Moore concludes from these observations that the stroma of the prostate cephalad to the verumontanum reacts to different stimuli or to a greater extent to the same stimuli than does that caudal to the verumontanum. Possibly also the posterior lobe of the prostate is biologically different from the other lobes. Nodules composed only of smooth muscle are not distinctive but represent a variant in which the stromal hyperplasia does not include glands. Nodular hyperplasia is associated with development of masses of lymphoid tissue, an appearance frequently mistaken for an inflammatory infiltration of lymphocytes. Inflammation may occur in the prostate with hyperplasia, but it is not the cause of the disease. The uninvolved part of the prostate shows atrophy and atypical hyperplasia, the histologic evidence of irregular or abnormal stimulation.

As the nodules increase in size, compression of the posterior lobe and of the peripheral portion of the lateral lobes occurs, so that in extreme examples they may not exceed 1 mm. in thickness. This compressed tissue, which in reality is the true prostate gland, has been called the surgical capsule. It is not the same as the anatomic capsule. Microscopically the changes

are characteristic and analogous to those of compression atrophy in other glandular organs. This compression atrophy should not be confused with senile atrophy of the posterior lobe that occurs in the absence of so-called benign hypertrophy.

Moore stresses that suprapubic prostatectomy is not in any sense prostatectomy. The operation actually is lobectomy, that is, a removal of the newly formed nodules; the prostate itself is not removed. Moore considers it highly probable that the urinary obstruction in these cases is a physiologic mechanism dependent on the function of the internal sphincter, possibly on spasm. He believes that it is possible that the beneficial results of prostatectomy are the result of destruction of the internal sphincter rather than of the removal of 50 or 100 grams of tissue. The success of the transurethral operation at the bladder neck lends some support to this hypothesis.

BASAL TEMPERATURE AND DATE OF OVULATION

As early as 1904 van de Velde pointed out the existence of variations in body temperature during phases of the menstrual cycle. A number of clinical investigations since then have confirmed his observation. Rubenstein¹ correlated a study of vaginal smears with a study of basal temperatures and found that during the phase of follicle development the basal rectal temperature tends to drop progressively. The low point in the temperature curve is reached when the follicle matures. Coitus at this time is therefore most likely to result in conception. The beginning progesterone production which occurs before ovulation suffices to counteract in part the temperature depressing action of estrone and therefore to cause an initial temperature rise beginning a few hours before ovulation. The temperature rise continues after ovulation and should exceed 0.5 degree F. in the first twenty-four hours after ovulation and 1 degree F. the first week after ovulation. As soon as the corpus luteum has regressed (a few days premenstrually) new follicles begin to develop. Estrone production begins again, although at a low level. Since there is now no functional corpus luteum, the temperature depressing action of estrone is again apparent and the temperature begins to go down. The drop continues through the preovulative phase of the next cycle. In the event of pregnancy, corpus luteum function persists and the temperature rise of the post-ovulative phase is maintained. If the temperature curves of a number of previous cycles are available, it is sometimes possible to detect pregnancy before the period is missed, since the temperature remains high.

1. Moore, Robert A.: Benign Hypertrophy of the Prostate, *J. Urol.* 50: 680 (Dec.) 1943.

1. Rubenstein, Boris D.: The Vaginal Smear, Basal Body Temperature Technique and Its Application to the Study of Functional States in Women, *Endocrinology* 27: 843 (Dec.) 1940.

Greulich and Morris² performed laparotomies on 14 women whose temperature records were kept daily for several successive menstrual cycles. Eight of the 14 women were found to have ovulated during the current cycle and 6 showed no indication of recent ovulation. In each of the former the temperature curve showed a characteristic rise of temperature preceding the ovulation. In 5 of the 6 who failed to ovulate, no such temperature rise occurred. A study of basal temperatures in 35 women by Williams³ showed that during the first half of the cycle an average temperature level of about 98 F. is usually maintained, often followed by an abrupt drop of 0.3 to 0.4 degree and then a shift to a higher temperature level, which continues at about 98.5 F. until one to three days before the onset of the next menstruation. The time of the shift from the low to the high temperature plateau marks the time of ovulation. According to Williams, this general temperature pattern is quite constant in normally ovulating women but varies greatly with pathologic ovulation.

In an article in this issue of *THE JOURNAL* Tompkins⁴ advocates a wider clinical application of the method of detection of the date of ovulation through basal temperature graphs. The method is based on the apparently well established observation that there is a typical temperature curve during the menstrual cycle. The temperature is relatively low during the first part of the month, drops to a minimum about the time at which ovulation occurs and rises definitely thereafter to a relatively high level, which is maintained until the next menses, when the temperature drops abruptly. Such temperature fluctuations are not found before the menarche, after the menopause or in men. If conception occurs, the temperature will remain at the high postovulation level. Tompkins has developed a special form, printed on grid paper, for the recording of daily basal temperatures. Tompkins believes that with the aid of these graphs it will be possible frequently to indicate the date of ovulation. In his experience these graphs have been useful in suggesting to childless couples the time of maximum fertility, in determining the date for endometrial biopsies and in setting the date for artificial insemination in 2 cases, both of which were successful after previous failures. The graphs may also be used to detect the "unsafe period" for those who do not use contraceptive measures. In determining the date of ovulation by the consideration of the basal temperatures, one should remember that such determinations would be correct only in the absence of any infection.

AMERICAN BAR ASSOCIATION CONDEMNS SOCIALIZED MEDICINE

Elsewhere in this issue (page 716) appears a report adopted Feb. 28, 1944 by the House of Delegates of the American Bar Association relative to the Wagner-Murray-Dingell bill, generally called the "socialized medicine bill." The report criticizes the proposed legislation because it is "prepared in a form which has become popular in the past ten years, being replete with involvement, cross references, new terminology, percentages and other confusing matters," so that the chapter on socialized medicine leaves the reader in utter confusion as to its meaning. The distinguished lawyers who prepared this statement point out that "no one can estimate how much tax money is involved or how many people are covered" from the face of the bill. Since, however, the bill would propose to include every individual worker and since every family in the United States has at least one and one-half employed working members, the coverage would include practically every family in the United States.

The statements made by Senator Wagner in introducing this measure are analyzed and at least twelve are pilloried as incorrect and misleading.

A fourth section of the report emphasizes the high quality of medical service prevailing in the United States today and points out that the indigent who are most in need of medical care would not be covered by this measure. "The Wagner-Murray-Dingell bill," says this statement, "would inevitably produce communistic medicine in the United States and would put all the people in a medical straitjacket under the supervision of the federal government for an alleged service which the vast majority either do not require or are able to provide for themselves."

Finally the report emphasizes that there are being developed in this country and under our system of private enterprise many plans for providing adequate medical care without paying the price of socialized medicine. At a previous session the House of Delegates of the American Bar Association stated its opposition "to any legislation, decree or mandate that subjects the practice of medicine to federal control and regulation beyond that presently imposed under the American system of free enterprise."

As a reason for its entrance into consideration of the Wagner-Murray-Dingell bill the House of Delegates of the American Bar Association explains that its organization is limited to an expression of opinion and judgment with respect to those fields which relate to the administration of justice and which directly affect the safeguards and protection of the rights and liberties of the citizens of this country. When, therefore, under the pretext of the general welfare, legislation is proposed in Congress which either inadvertently or with deliberate

2. Greulich, William Walter, and Morris, Edward S.: An Attempt to Determine the Value of Morning Rectal Temperature as an Indication of Ovulation in Women, *Anat. Rec.* 79: 27 (March 25) 1941.

3. Williams, W. W.: The Basal Metabolic Rate, Basal Body Temperatures and the Ovarian Cycle, *Am. J. Obst. & Gynec.* 46: 662 (Nov.) 1943.

4. Tompkins, Pendleton: The Use of Basal Temperature Graphs in Determining the Date of Ovulation, this issue, p. 698.

subtlety constitutes a direct attack on the rights and liberties of the citizens of this country, it becomes the duty of the American Bar Association actively to voice its objections. The six objections listed specifically include the extent to which the measure depreciates local self government: a condemnation of the authority vested in the Surgeon General of the United States Public Health Service by S. 1161 which would give him the power arbitrarily to make rules and regulations having the force and effect of law; a condemnation of the procedure by which physicians, hospitals and individual citizens would be made to serve the purposes of a federal agency; the failure of the bill to safeguard the rights of patients, citizens, hospitals or doctors, which might be denied by the arbitrary or capricious action of one man; the failure of the bill to provide for any appeal from the action of the Surgeon General; and, finally, the severe condemnation of the vicious system whereby administration officials judge without court review the actions of their subordinates in carrying out orders which might be issued to them.

The final paragraph of this report of the American Bar Association merits quotation and requotation as a fundamental appeal to the citizens of the United States to protect the Constitution. This statement says:

The Constitution of the United States is designed to protect the citizens of this republic in the exercise of the rights of free men. The provisions of that instrument can be rendered impotent when our citizens, for the sake of an apparent immediate benefit, surrender to their government such direct control over their lives that government, by imposing a constant fear upon them of having those benefits withheld or withdrawn, can compel from them obedience and subservience to its dictates.

Current Comment

PATHOLOGIC ANATOMY AT WAR

Elsewhere in this issue (p. 710) an article on the Army Medical Museum explains the organization of pathologic anatomy in the Medical Department of the U. S. Army. The startling accomplishments of surgery, medicine, physiology, bacteriology and epidemiology as they partake in the war effort tend to obscure the significant part played by pathologic anatomy. In man, and in animals with natural or experimentally induced disorders, the final identification of disease, indispensable in investigation, depends on pathologic anatomy. Through the medium of autopsies and surgical specimens, pathologic anatomy serves the Army in its usual unpretentious manner. The organization now operating in the Army is such that careful examinations can be made in the field; central facilities provide for skilled controls and permanent files. Surgeons are aided in their operative work, internists in their investigation of patients and all medical officers in diagnosis, treatment and prevention, not only of internal diseases, but of injuries on land, on sea and in the air. Recognition of

these evident facts should lead to the appropriate placing of pathologic anatomy in all phases of medical work in the services, in the setup of medical administration and in the hospitals and other installations here and abroad. Pathologic anatomy is very much "in" for the duration and beyond.

INTERNSHIPS AND RESIDENCIES FOR LATIN AMERICAN PHYSICIANS

Elsewhere in this issue is an announcement of the decision by the Procurement and Assignment Service that "graduates of Latin American schools currently serving as interns or residents would not be counted in hospital quotas." This ruling should do much to facilitate the hospital training of Latin American physicians, who are coming to this country in increasing numbers for internship and residency training. Until recently the educational and professional ties of many Latin American countries were firmer with European centers of medicine than with the institutions in the United States. The decline of learning and science, including medical education, in Europe during the war will tend to increase the importance of the United States as a center for advanced training for years after the war. Schools and institutions here have escaped not only the physical destruction of war but the even more damaging effects of the intellectually sterile philosophies of the fascist countries. After the war we may expect to be host to many more Latin American physicians, who will turn to the United States rather than to Europe. This tendency deserves the full support of the profession in this country, which will share in a mutually beneficial exchange of ideas and the cementing of lasting inter-American friendships. The Procurement and Assignment Service is to be congratulated for its wisdom in taking an important step in this direction. Medical schools and hospitals will doubtless encourage the postgraduate education of Latin American physicians.

CATIONIC SOAP

The term cationic soap is applied to synthetic detergents which are excellent germicides and are also effective skin cleansers when employed in aqueous solutions at about 1 per cent concentration. In the course of studies on the effectiveness of these agents for rapid degermination of the hands, Miller and his colleagues¹ discovered that they deposit a nonperceptible film on the skin. This film retains bacteria underneath it and is resistant to mechanical trauma; whereas the outer surface exerts a strong germicidal action, the inner surface of the film has a low bactericidal power. These observations introduce a further complication into the evaluation of products of this type.

1. Miller, B. F.; Abrams, R.; Huber, Dorothy A., and Klein, M.: Formation of Invisible, Nonperceptible Films on Hands by Cationic Soaps, *Proc. Soc. Exper. Biol. & Med.* 54: 174, 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

ARMY MEDICAL MUSEUM

Army Institute of Pathology

Howard T. Karsner, M.D.

CLEVELAND

An understanding of the part which pathology plays in the medical service of the Army depends in large part on a realization of what goes on in the Army Medical Museum. This remarkable institution was established in 1862 by order of Surg. Gen. William A. Hammond, when he directed medical officers to send to his office morbid anatomic specimens illustrating wounds and the effects of projectiles. Seven months later, 1,349 specimens had been collected. Situated first in the Surgeon General's Office, a separate building was required within a year. Ford's Theater was closed after the assassination of President Lincoln but was subsequently altered by order of Congress for the housing of the museum. Money for the present building was appropriated in 1885 and construction completed in 1887, or fifty-seven years ago. The Army Medical Library, which was established by Surgeon General Lovell in 1835, has shared these quarters from the beginning.

Visitors from Europe have repeatedly praised the museum, and in 1870 Berenger-Féraud said that the United States had done as much in five years as had all Europe in a century and that our museum contained more specimens than all the pathologic anatomic museums of Europe combined. It remains the only medical museum maintained by the United States government.

The present communication is not concerned principally with the function as a museum, even though by 1937 there were 150,000 specimens and 45,000 photographs. Nor is there any need to discuss the education of the public in matters of preventive medicine and hygiene through the medium of exhibits, which occupy 15,200 square feet of floor space. In passing, however, it may be mentioned that there are now well over 100,000 visitors a year.

In his book "Victories of Army Medicine," Brigadier General Hume¹ says that Surgeon General Hammond had in mind the study of specimens collected in order to "lead to reduction in mortality." This has been done by investigation and by teaching. Hume speaks of three great institutions, the Army Medical Library, the Army Medical Museum and the Army Medical School. These have been closely associated, and the museum staff has been responsible for teaching pathology in the school. Teaching of various other groups will be mentioned later.

The purposes of the museum have been expanded so that it is now authorized to use as a subtitle Army Institute of Pathology. As a matter of fact, the new subtitle gives a clearer indication of its present activities than the original designation. Army Regulation 40-410, issued Aug. 3, 1942, states that "the primary professional function of the Army Medical Museum is to furnish a central service for tissue pathology." This central laboratory has three major aims, which are (a) diagnosis and review of pathologic material, (b) instruction and (c) research.

The arrangements for diagnosis and review of pathologic material have been found to be highly effective. The professional staff of the museum now includes a group of active pathologists well trained in general pathology and certain of its

special fields as well as pathologists especially competent in dental and in veterinary medicine. Because of obvious limitations, fully trained pathologists cannot be provided for every army hospital. To meet this situation, seventeen histopathologic centers have been established in the United States and several central laboratory units have been sent overseas, all staffed by trained personnel. Through these channels all autopsies are reported to the institute laboratories, including protocols, clinical abstracts, photographs, x-ray films, microscopic sections, paraffin or tissue blocks and, when advisable, whole organs. All places where autopsies are to be performed are supplied with a directive of technic prepared at the request of the Surgeon General by a Conference Group on Pathology of the National Research Council. Surgical specimens are similarly routed, especially all tumors, but the histopathologic centers are expected to "screen out" material not of sufficient importance to be sent in for review. Reports are sent to the referring laboratories and also placed in the permanent files of the museum. Thus any medical man is assured that study of cases at autopsy is not restricted by field conditions, and any surgeon knows that his material will be examined by groups of well qualified pathologists. If the surgeon is in a hurry, his specimen can be sent by air mail and he receives a report by radiograph.

Army Regulation 40-410 directs that the material be made available "for teaching purposes at Medical Department schools, other schools devoted to military education, and for recognized medical, dental and veterinary schools." The teaching function is exercised in various ways. Teaching at the Army Medical School has been mentioned. For a time, officers from army laboratories and those about to assume such duties were assigned to the museum for temporary duty in order to become familiar with the museum and its work. Certain officers have been assigned to develop various special fields, such as neuropathology and dermal pathology. Of great importance is the preparation and distribution of "study sets." These are widely circulated among army hospitals and give the officers exceptional opportunity to study various lesions. The sets, each numbering from 25 to 50 microscopic sections, cover such subjects as epidemic hepatitis, periarteritis nodosa, nevi and dermal cancer, interstitial pneumonitis, intracranial tumors, diseases of the thyroid, diseases of the lymph nodes and lesions of the distal parts of the nephrons. The list is constantly being enlarged.

The clinicopathologic conference is also used as a teaching method. The museum furnishes material for these exercises, including clinical records, autopsy protocols, microscopic sections, lantern slides, epicrises and bibliographies. These are readily available to army medical installations.

Material on tropical diseases is provided for the Army and to civilian schools. For this purpose tissue blocks, microscopic sections and lantern slides, and material for clinicopathologic conferences can be procured on application to the curator. This activity, supported by the John and Mary R. Markle Fund, is of far reaching importance in present day instruction. With the aid of the Josiah Macy Jr. Foundation, lantern slides have been prepared and distributed for the use of civilian pathologists who participate in the remarkable program of postgraduate instruction in the hospitals of the Army Air Forces.

In line with its educational program, the museum maintains several registries of pathology. Army Regulation 40-410 authorizes the museum "to act as custodian for the National Research Council of the American Registry of Pathology." By arrangement with various special societies, the museum receives

1. Hume, E. E.: *Victories of Army Medicine: Scientific Accomplishments of the Medical Department of the United States Army*, Philadelphia, J. B. Lippincott Company, 1943.

specimens for study both individually and collectively. Accompanying the specimens are notes on clinical features, roentgenograms and so on. The registries vary greatly in number of accessions, but it is noteworthy that there are on file approximately 2,000 cases of ocular melanoma and 4,000 tumors of the bladder and that about 125 human eyes are received each month. These registries now include tumors of the lymphatic apparatus, ophthalmic pathology, genitourinary pathology, dermal pathology, otolaryngic pathology, orthopedic pathology, gynecopathology, oral and dental pathology and tumors of the brain, the breast, the endocrines and bone. From the specimens collected, study sets comprising from 25 to 100 microscopic preparations are lent to society members and others. In addition there are exceedingly valuable atlases, illustrated by photomicrographs which are accompanied by clinical and descriptive data. These can be purchased at cost of manufacture. Started when Col. G. R. Callender was curator, the registries of pathology have increased in number and comprehensiveness and have assumed great importance under the direction of the present curator, Col. J. E. Ash.

Army Regulation 40-410 orders the conduct of "investigations and research on the accessions" and the arrangement of material so "that it will be available for reference and study by other properly qualified investigators." The staff of the museum has followed this order with keen interest. The investigations are not merely academic research projects but in large part have immediate application. The studies of epidemic hepatitis, which seemed to follow vaccination against yellow fever, showed conclusively that our troops had not contracted yellow fever as a result of vaccination. The studies of blast injuries, here and elsewhere, have determined methods of protection. Significant also are the examinations of material from cases of burns, crush syndrome, transfusion reactions, blackwater fever and the like. Both from the point of view of diagnosis and also research, attention is being given to the occurrence of tumors, malignant and benign, especially of the skin and the central nervous system, to disease of the coronary arteries and to other disorders usually thought to belong to a different age group from that active in military operations. Perhaps of less direct application, but nonetheless of vast importance, are investigations now being conducted of such conditions as primary atypical pneumonia, viral infections of the central nervous system, tropical diseases, lesions of the lymph nodes, meningitis, periarteritis nodosa, non-tuberculous destructive disease of the adrenals, tumors of the jaw and other bones, tumors within the eye and epibulbar tumors, and effects of high altitude on the ear. The list is too long to permit mention of all the conditions under study.

The photographic section has operated since 1867. It has gradually been extended and improved so that now the gross photographs and photomicrographs, both black and white and in color, are the best that can be produced. In addition, a center for medical photography, under the direction of a skilled and experienced professional, guides the work in the whole medical service of the Army, cooperates with the Signal Corps and has sent several trained units overseas. In addition to drawings and paintings, some of which date back to the Civil War, plastic art is represented by many models and moulages. With this background, a department has been established under the direction of a distinguished sculptor, in which are made latex models of wounds and other injuries. The realistic pliable plaques can be attached to extremities and on the body, so that training in the Medical Field Service School and elsewhere becomes intensely practical.

Under the authority of the Surgeon General, the museum has instituted its system of resident consultants. Civilian pathologists, especially those with established reputations in certain lines of teaching and research, take up residence in Washington for two or three weeks, during which time they are in constant daily attendance at the museum. The officers bring to them problems of pathologic diagnosis, refer certain aspects of investigations, look to them for suggestions as to further studies and generally pump them dry. In return, the consultant sees the work of an enthusiastic, energetic group of medical officers devoted to the service of the nation and of science. He sees a pathologic material which in volume, variety and current interest cannot be equaled in any other laboratory in this country and probably not in any other institution the world over.

The place is as active as the proverbial beehive, but without the physical excellence of the hive. The building is now so old as to be unsuited to its manifold purposes. Equipment is good but not ideal. Facilities of one kind or another are deficient in many respects, such as elevators, toilets and lavatories. Hazards due to fire and water have not been accurately assessed, but they exist. In spite of these handicaps, work of high order is carried on by a loyal group of medical and other officers, including regulars and those commissioned from civil life, and lay associates. It is to be urged that construction of a new building will not be delayed any longer than is absolutely necessary.

This Army Institute of Pathology goes far beyond the scope of a museum. I speak as one having authority because I am one of those who have had the esteemed privilege of being a resident consultant.

2085 Adelbert Road.

TRAINING OF NEWLY COMMISSIONED MEDICAL CORPS OFFICERS WHO ARE RECENTLY GRADU- ATED INTERNS

Many newly commissioned medical corps officers who have recently completed a nine months internship and the basic course for medical department officers are being attached to named general hospitals for the completion of their professional training, according to Army Service Forces Circular No. 47, dated Feb. 12, 1944. While attached to these general hospitals they will be given "on the job" training as understudies in active medical and surgical wards and in clinics. Duty assignment on surgical and medical services will be rotated at least once every three weeks. It is contemplated that immediately following this training in a named general hospital these officers will be assigned as medical and surgical ward officers, as laboratory officers and as medical officers with tactical units.

Subjects which should be particularly emphasized on ward rounds and in clinics include attention to and care of the seriously ill; use of penicillin in both surgical and medical cases; use of sulfonamides in both surgical and medical cases; treatment of venereal diseases; general principles of wound treatment, including débridement, control of pain, prevention and treatment of shock; treatment of fractures and other orthopedic conditions, including splints and splinting, use of plaster of paris bandages, Tobruk splints and the care and handling of back injuries; general principles in the handling of head, face and jaw wounds and wounds of the chest and genitourinary system; treatment of burns; problems and principles of transfusions under field conditions, including whole blood transfusions, direct and indirect transfusion technic and the use of blood substitutes to include plasma, albumin and electrolytes; administration of tetanus toxoid and gas gangrene serum; administration of vaccines; diagnosis and treatment of malaria; diagnosis and treatment of bacillary and amebic dysentery; diagnosis and treatment of dengue and typhus; prevention and treatment of heat stroke, heat exhaustion and heat cramps; prevention and treatment of freezing, frostbite, snow blindness and immersion foot, and the handling of neuropsychiatric cases.

The commanding officer of each general hospital will designate a training officer who will be responsible for the conduct, rotation and coordination of this training, ward rounds and clinics so that these officers can derive the maximum benefits from this limited period of "on the job" training.

AWARD OF SOLDIER'S MEDAL

A Medical Corps officer and four Medical Department enlisted men, all members of the Medical Detachment with a Coast Artillery battalion, have been awarded the Soldier's Medal for the rescue of injured persons from a burning ammunition barge in Sicily, the War Department announced recently. When responding to a call for emergency medical assistance, they rushed to the burning barge, where, in the midst of exploding ammunition and faced with the imminent danger of further major explosions, they succeeded in collecting the injured and transferring them to the shore for first aid and evacuation.

Through their efficient performance of duty and utter disregard of personal risk, many lives were saved. Those decorated were Capt. Samuel P. Durr, Medical Corps, Rock Island, Ill.; Corp. Rodney M. Preston, Jacksonville, Ill.; Private First Class John A. Dobrinski, New York, and Private Hubert Messenger, Kingman, Kan.

33D FIELD HOSPITAL

LIEUTENANT COLONEL SAMUEL A. HANSER, M.C., A.U.S.
Commanding 33d Field Hospital, APO No. 306

Because of the many inquiries with regard to the article about our hospital (THE JOURNAL, Nov. 20, 1943, p. 774) I am writing this explanation in regard to the use of field hospital platoons in the advanced combat zones. Since the Italian campaign began, this field hospital has had the opportunity of having its platoons behind the individual divisions as close to the front lines as possible.

The field hospital basically contains a headquarters and three platoons, and a total of twenty-two officers, eighteen nurses and one hundred and eighty-seven enlisted men. A platoon consists of four medical officers, one dental officer, one medical administrative officer and fifty-six enlisted men. When working in an

advanced combat zone it is reinforced by auxiliary surgical teams, usually four general surgical teams and one shock team. A surgical team consists of a surgeon, assistant surgeon, anesthesiologist, one nurse and two or three enlisted men.

The mission of a field hospital is to take care of nontransportable casualties, that is the patients whose conditions are critical and whose lives are endangered or lost by transporting them back to an evacuation hospital. The surgery is done by the best qualified surgeons in the theater.

During the Italian campaign we have taken care of 1,300 casualties and we feel that we have saved many lives by doing major surgical procedures in the advanced combat zone. The field hospital platoons have the finest of equipment, closed anesthesia machines, oxygen therapy machines, a blood bank and other vital necessities needed for the best possible surgery.

PRISONER OF WAR

Word has recently been received from Capt. Harry S. Hickman, formerly of Grants Pass, Ore., that he is being held a prisoner of war in the Philippines. Dr. Hickman graduated from the College of Medical Evangelists, Loma Linda, Calif., in 1940 and entered the service in October of that year.

NAVY

REGIMENTAL DOCTORS

Doctors assigned to a Marine regiment somewhere in the South Pacific pose in front of their sick bay. They are, left to right, Drs. Thomas E. Newell, Dayton, Ohio; Earl M.

the efficient treatment of battle casualties under extremely difficult and trying conditions. His brilliant leadership and untiring devotion to duty contributed in large measure to the successful care of many hundreds of patients." Dr. White graduated from Vanderbilt University School of Medicine, Nashville, in 1916 and has been in service since Aug. 20, 1917.



Medical officers assigned to a marine regiment in the South Pacific. Official U. S. Marine Corps Photo.

Haugrud, Fargo, N. D.; Max A. Finton, Jackson, Mich.; Maurice R. Walsh, Covington, Ky.; John V. Reilly, St. Louis, and Don P. Nebeker, Los Angeles. All are M.D.'s with the exception of Dr. Reilly, who is a D.D.S.

CAPT. JOEL J. WHITE AWARDED LEGION OF MERIT

Capt. Joel J. White, United States Navy, formerly of Nashville, Tenn., was awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as commanding officer of a naval hospital at an advanced base in the South Pacific Area from August 1942 to January 1943. Displaying outstanding professional skill and remarkable physical endurance, Captain White organized and operated a hospital in the New Hebrides Islands with a section assigned to Guadalcanal during the early period of operations at this strategic base. With utter disregard for his own personal safety he made repeated trips into the forward combat areas in order to develop facilities for

LIEUT. FRANK K. DEAN AWARDED BRONZE STAR

Lieut. Frank K. Dean, formerly of Madison, Wis., was awarded a bronze star for participating in the battle of Tarawa in November 1943, two months after reporting for duty as a member of the Navy Medical Corps. He previously had received an Asiatic Pacific campaign ribbon. Dr. Dean wrote to his wife, in Madison, that the ship on which he saw duty had carried no medical officer and he found no preparations or supplies when he went aboard. Just as the pioneer doctors, he was forced to improvise. From the ship's cook he commandeered tablespoons for retractors, forks for slings, and a pressure cooker for a sterilizer. Splints were whittled ashore, and a local station gave him sutures and plasma. Dr. Dean graduated from Northwestern University School of Medicine, Chicago, in 1935.

FIRST GRADUATING CLASS AT NEW HOSPITAL CORPS SCHOOL

Two hundred and twenty-four enlisted members of the Women's Reserve, U. S. Naval Reserve, graduated February 7 in the first graduating class of the newly commissioned Hospital Corps School at the U. S. Naval Hospital, Bethesda, Md. Twenty-two finished the intensive four week course with the rating of pharmacist's mate, third class; 146 as hospital apprentice, first class, and fifty-six as hospital apprentice, second class. Rear Admiral C. W. O. Bunker, medical officer in command of the National Naval Medical Center, and Capt. W. J. C. Agnew, Medical Corps, U. S. Navy, of the Bureau of Medicine and Surgery, addressed the graduating class, and certificates were presented by Capt. John Harper, commanding officer of the Hospital Corps School.

FIRST NAVY NURSES IN EUROPE

One hundred navy nurses, the first to set foot on European soil since the beginning of the war, have arrived in England for assignment to duty in a British hospital which is being taken over by the Navy. Lieut. Comdr. Mary Martha Heck, A. N. C., is in command and will direct all navy nursing activities in the European theater.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

LATIN AMERICAN MEDICAL GRADUATES SERVING AS INTERNS AND RESI- DENTS IN U. S. HOSPITALS NOT COUNTED IN QUOTA

At a recent meeting of the Directing Board, Procurement and Assignment Service, it was decided that graduates of Latin American medical schools currently serving as interns or residents would not be counted in hospital quotas.

It was felt that most Latin American doctors who accepted internships or residencies were in fact postgraduate fellows

attached to U. S. hospitals. In some instances language difficulties precluded their rendering as much medical care to hospital patients as native born and U. S. trained house officers. If Latin American physicians were to be counted in hospital quotas, there would be some hesitancy in accepting them in lieu of native born United States medical graduates.

Since it is highly desirable to have Latin American physicians seek postgraduate medical training in the United States, dropping them from hospital quotas would encourage hospital superintendents to accept them as interns and residents and thus facilitate their securing additional training in this country.

CIVILIAN DEFENSE

NEW OCD CHIEF MEDICAL OFFICER STATES FUTURE POLICY

The U. S. Office of Civilian Defense announces that Dr. W. Palmer Dearing, senior surgeon, U. S. Public Health Service, has been appointed chief medical officer, effective March 1, to succeed Dr. George Baehr, who has served as chief medical officer since June 1, 1941. Dr. Courtney M. Smith, senior surgeon (R), U. S. Public Health Service, formerly regional medical officer of the Ninth Civilian Defense Region (West Coast), will become assistant chief medical officer. Dr. Wallace M. Chapman, surgeon (R), U. S. Public Health Service, will succeed Dr. H. van Zile Hyde as field casualty officer, and Dr. Charles C. Chapple, surgeon (R), U. S. Public Health Service, will succeed Dr. Karl J. Thomson as intelligence officer. Dr. Dearing released the following statement:

"The Emergency Medical Service, the casualty receiving and emergency base hospitals, the plans for emergency medical service to industrial plants and the plans for mutual aid on a state-wide or regional basis for distribution in an emergency of personnel, equipment and supplies, including blood plasma, must be maintained.

"The affiliated units consisting of fifteen physicians, surgeons and specialists commissioned in the Public Health Service Reserve, which are available for call to render aid to civilians or to military personnel in a war emergency, will continue to maintain their organization for service when needed. They will be activated by the Surgeon General of the Public Health Service on recommendation of the state chief of Emergency Medical Service through the chief medical officer, Office of Civilian Defense. The circumstances under which they will be called to serve are set forth in OCD Circular, Medical Series No. 31. Likewise, affiliated nurses' units which have been recruited to serve in such emergencies are composed of twenty-two nurses each who have special civil service appointments. The file of names will be kept current in the Emergency Medical Section of the Public Health Service and in the regions where organized.

"The blood plasma banks which have been established in 180 hospitals with the assistance of grants-in-aid from the Public Health Service on recommendation of the Office of Civilian Defense will continue to maintain their reserves of plasma, which can be dispatched as needed by the local or state chiefs of Emergency Medical Service. In addition, the 29,500 units of frozen and 50,000 units of dried plasma procured by the Public Health Service and distributed to the physicians and hospitals of the Emergency Medical Service will continue to be available. Dr. John B. Alsever, surgeon (R), U. S. Public Health Service, will continue to exercise technical supervision of the plasma program and to consult with hospitals on their plasma problems.

"The Rescue Service, which was recently inaugurated following two nationally sponsored pilot schools at Pittsburgh and at Berkeley, Calif., is being developed under the direction of Mr. Philip Miller, engineer (R), U. S. Public Health Service, chief rescue officer. Rescue personnel trained in the pilot schools are conducting training schools in states and communities. This training has already paid dividends in lives saved at disasters such as the Easton, Pa., explosion and fire, the wreck of the

Congressional Limited, the disaster from the explosion at Kearney, N. J., and other lesser catastrophes.

"The gas protection program will be continued under Dr. Alberto F. Thompson Jr., sanitarian (R), U. S. Public Health Service, chief gas officer. Local gas reconnaissance specialists will be encouraged to maintain their organizations at peak efficiency by locally sponsored and conducted refresher courses for which the newest and most satisfactory methods of detection and recognition of gases will be available. Consultative assistance will be provided to states and communities by the Office of Civilian Defense when requested. More emphasis will be placed on the routine hazards surrounding manufacture, transportation and storage of toxic chemicals, hazards which can be dealt with only by chemically trained persons.

"The sanitary engineering program, including the mutual aid water program, will be continued under state and local auspices with the guidance of the U. S. Public Health Service. The Public Health Service was directed by the President to assume responsibility for security of public water supplies, and the engineering staff of the Medical Division has been transferred to the Public Health Service to operate the two programs concurrently and to serve in a consultant capacity to the O. C. D.

"The recent reduction of the staff of the National Office of Civilian Defense makes it imperative that states and communities assume more responsibility for these activities. The Emergency Medical Service organization in the field and in hospitals has repeatedly demonstrated its value in the disasters which wartime hazards have brought on us in increasing numbers. For the first time the health medical facilities of our communities have been organized for effective mobilization in the event of an emergency, and these gains should not be allowed to lapse. It is desirable that the Emergency Medical and Rescue Services be allied with permanent agencies of state and local government.

"In many localities the Emergency Medical Service has already been established under the health department. This has many advantages because the health department is a professional organization with the administrative machinery and personnel already at hand to maintain leadership, keep records and serve as the coordinating center in an emergency. Those cities having a department of hospitals may find it advantageous to establish and maintain the Emergency Medical Services under their jurisdiction. It would be desirable for this pattern to be extended to those communities which have established the Emergency Medical Service on a temporary basis without any relation to permanent agencies. Similarly, the Rescue Service might well be established in the public works department. Rescue work requires heavy equipment, tools, trucks and strong willing hands. The permanence of the public works department will be of great assistance in maintaining the organization.

"The emergencies which have been created by the war have borne fruit in the consolidation of community thinking and action in the protection of their communities. With the maintenance of a well trained and equipped Emergency Medical Service, every community will be prepared to give adequate care to injured and to save lives which otherwise would be lost. It appears certain that this cooperative and constructive spirit will be preserved in the organized Emergency Medical Services of the Citizens Defense Corps throughout the country."

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

A meeting of the Council on Medical Service and Public Relations was held in Chicago on February 14 and 15. The following members were in attendance: Dr. Louis H. Bauer, chairman, Dr. James E. Paullin, Dr. James R. McVay, Dr. W. S. Leathers, Dr. E. J. McCormick, Dr. Alfred W. Adson, Dr. John H. Fitzgibbon and Dr. G. Lombard Kelly, secretary. The subjects discussed included:

FELLOWSHIPS IN A. M. A. FOR MEDICAL STUDENTS

The Council will recommend to the House of Delegates that the Board of Trustees work out a plan whereby medical students in approved schools can become student members of the American Medical Association and that the Board recommend the necessary changes in the Constitution and By-Laws to accomplish this. The idea of this recommendation is to inculcate medical students with the ideals of the medical profession and the medical societies.

COURSES IN MEDICAL ECONOMICS, SOCIOLOGY AND ETHICS

It was also decided to request the Council on Medical Education and Hospitals to consider taking the necessary steps as soon as possible to have each medical school give a course on medical sociology, medical economics and medical ethics.

PLATFORM OF THE A. M. A.

The Council decided to study the platform of the American Medical Association adopted in 1937 with a view to revising it bringing it up to date and then to refer the revised platform to the House of Delegates for consideration.

ANALYSIS OF MEDICAL PLANS

The Council considered various medical service plans, including the up-to-date analysis of society-sponsored plans by the Bureau of Economics. It discussed various industrial plans and has the whole subject of voluntary insurance under study. It also considered the question of diagnostic laboratories and medical service bureaus and likewise has them under further study.

VETERANS BUREAU

A considerable discussion was devoted to the status of medical service of the Veterans Bureau, and a conference will be asked

with officials of the Veterans Bureau to see in what way the Council can cooperate with them in improving the status of the medical service.

THE BUDGET

A budget was adopted and referred to the Board of Trustees.

COOPERATION WITH STATE SOCIETIES

All state societies are requested to send a copy of their state journals to the office of the Council in Chicago so that the Council can keep informed of actions taken in various states.

INDIANA PLAN TO COMBAT WAGNER-MURRAY-DINGELL BILL

The Council studied the speaker's kit compiled by the Indiana State Medical Association in its fight against the Wagner-Murray-Dingell Bill and considered it an excellent collection of material and invites attention of the other states to what Indiana has accomplished in this regard.

MEETING IN WASHINGTON

The Council decided to hold its next meeting in Washington, D. C., and to devote one day of its meeting to a conference with various agencies concerned in medical care.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

March 11. "Battles Won in Laboratories."

Speaker, A. C. Ivy, Ph.D., M.D., Northwestern University.

March 18. "You Must Help Win This War."

Speaker, H. A. Vonachen, M.D., medical director, Caterpillar Tractor Company, Peoria, Ill.

March 25. "Our Blood for Our Boys."

Speaker, G. Canby Robinson, M.D., national director, Blood Donor Service, American Red Cross, Washington, D. C.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—A subcommittee of the Senate Committee on Commerce has voted to submit an unfavorable report to the full committee with regard to S. 1096, creating a Bureau of Vital Statistics in the United States Public Health Service. A subcommittee of the House Committee on Interstate and Foreign Commerce has been conducting public hearing on H. R. 3379, to codify the laws which relate to the Public Health Service.

Bills Introduced.—H. R. 4251, introduced, by request, by Representative Bland, Virginia, proposes to give honorably discharged, disabled or retired marine employees of the Panama Canal a preference under civil service and to extend to them the facilities of the Public Health Service. H. R. 4255, introduced, by request, by Representative Barry, New York, proposes to amend the law relating to the Federal Trade Commission so as to authorize that commission to require in any order it may issue the publicizing by radio or printed advertising the

contents of the order by the person, partnership or corporation complained of, the publicizing being at the expense of the person, partnership or corporation. H. R. 4260, introduced, by request, by Representative Pace, Georgia, proposes to amend the Agricultural Adjustment Act to provide for the maintenance and operation of school lunch programs.

STATE MEDICAL LEGISLATION

Kentucky

Bill Introduced.—H. 366 proposes to authorize the state board of health to give medical scholarships of \$600 annually to bona fide residents of Kentucky who agree in writing to pursue medical courses in accredited medical colleges in Kentucky and after graduation and completion of internships of not exceeding two years to engage continuously in the practice of medicine in rural communities in Kentucky, to be selected by the state board of health, for a period of years equal to the number of years that each is a scholarship beneficiary.

Mississippi

Bills Introduced.—H. 401 and H. 455 propose to provide a system of workmen's compensation for industrial accidents. H. 531 proposes to make it unlawful for any person to employ another, or for any person to accept the employment, as a domestic servant unless within thirty days after the date on which the employment commences the domestic servant submits to a medical examination to be performed by a licensed physician. Such employment can then continue only if, on the basis of that examination, the examining physician issues a certificate that the domestic servant is apparently free from syphilis, gonorrhea, tuberculosis or typhoid fever. S. 267 proposes to appropriate \$54,000 to provide funds with which the state board of health and the state department of education may cooperate with the international health division of the Rockefeller Foundation and the general education board, respectively, in carrying out a program of coordinated school, health and nutrition services. S. 261 proposes to require annually as a prerequisite for the employment of all public school teachers and other state employees working directly with children an "x-ray analysis by a competent physician or by the state health department." The bill proposes that, if such examination "shows a positive result," the services of that employee shall be terminated for work with children so long as in the opinion of a competent physician or the state health department the tuberculosis is in an active and contagious stage. H. 503 and H. 527 propose to establish a four year medical school and hospital, to be known as the University of Mississippi Medical School and Hospital. H. 406 proposes to authorize the counties, cities or towns or supervisors' districts, separately or jointly, to establish and operate hospitals and to cooperate with the Works Progress Administration, or other agency of the United States government, or with one or more counties or one or more cities, or combination thereof, and the state, in the establishment and operation of those hospitals.

New York

Bills Introduced.—S. 898 and A. 1167, to amend the uniform narcotic drug act, propose, among other things, to prohibit supplying of narcotics for nonmedical needs or for the treatment of drug addiction when the patient is not confined to an institution, hospital or home, or for the satisfaction of a narcotic habit not complicated by an emergency or the presence of an incurable disease. S. 934, to amend the laws relating to the practice of medicine, proposes that licentiates be required to register on or before March 1 in each even year, rather than

of each year as now required. A. 1355 proposes that the state pay to any person injured by a dog the medical expenses, not to exceed \$100, incurred by reason of the injury. The owner of the dog or dogs involved is to be liable to the county in reimbursement for the amounts so paid. A. 1452 proposes to establish in the state health department an insurance fund to pay for necessary medical care for all persons insured by the fund. The scheme applies to all persons employed in the state at wages not in excess of \$2,500 and is financed by compulsory contributions from the employer and employee and from the state.

New Jersey

Bills Introduced.—A. 134, to amend the medical practice act, proposes to permit the board of medical examiners during the present war and for a period of three months after its cessation to admit an applicant to examination for a license to practice who has completed not less than nine months of an internship acceptable to the board in a hospital approved by the board. The bill also proposes to authorize the revocation of a license of a licentiate who has plead nolo contendere, non vult contendere or non vult to an indictment, information, complaint or accusation alleging the commission of the crime of criminal abortion or of crime involving moral turpitude. A. 135, to amend the medical practice act, proposes to exempt from the provisions thereof a chiroprapist "while operating in each particular case under the specific direction of a regularly licensed physician or surgeon."

Rhode Island

Bill Introduced.—H. 748 proposes to appropriate \$25,000 to be expended under the direction of the state director of health for the hospitalization of wives and children of men in the armed services below the grade of commissioned officers who are unable to pay for necessary hospital care.

South Carolina

Bill Introduced.—H. 1052 proposes to permit as a deduction in computing net income subject to taxation "all monies paid by individuals" to hospitals for hospitalization, and also all monies paid for medicines, services of nurses and services of physicians during hospitalization."

Virginia

Bill Introduced.—Substitute for S. 103 proposes to make incurable insanity a ground for divorce.

MISCELLANEOUS

OFFICE OF VOCATIONAL REHABILITATION OF FEDERAL SECURITY AGENCY

The first meeting of the Professional Advisory Committee of the Office of Vocational Rehabilitation of the Federal Security Agency was held in Washington on Friday March 3.

Present were the following members of the committee representing the professional specialties most actively concerned in rehabilitation:

- Rev. John W. Barrett, Chicago, director of Catholic hospitals, Archdiocese of Chicago
- Miss Harriet Bartlett, Boston, president, American Association of Medical Social Workers
- Dr. E. M. Bluestone, New York, director, Montefiore Hospital
- Dr. Karl M. Bowman, San Francisco, president-elect, American Psychiatric Association
- Dr. Roderick Brown, Pittsburgh, tuberculosis specialist
- Dr. Guy A. Caldwell, New Orleans, secretary, American Board of Orthopedic Surgery.
- Dr. John S. Coulter, Chicago, member, Council on Physical Therapy, American Medical Association
- Dr. Purman Dorman, Seattle, ophthalmologist
- Dr. Robert Elman, St. Louis, associate professor of clinical surgery, Washington University School of Medicine
- Miss Marjorie Fish, New York, in charge, Professional Courses in Occupational Therapy, Columbia University
- Lieut. Col. Raymond Hussey, M. C., A. U. S., Baltimore, director, Army Industrial Hygiene Laboratory
- Dr. Victor Johnson, Chicago, secretary, Council on Medical Education and Hospitals, American Medical Association
- Dr. E. S. Mariette, Minneapolis, medical director and superintendent, Glen Lake Sanatorium

- Dr. Horace Newhart, Minneapolis, professor emeritus of otology, rhinology and laryngology, University of Minnesota Medical School
- Dr. Winthrop M. Phelps, Baltimore, orthopedic surgeon
- Miss Marion Randall, Washington, D. C., chief nurse, Medical Division, Office of Civilian Defense
- Dr. W. D. Stroud, Philadelphia, member, Council on Industrial Health, American Medical Association
- Dr. V. P. W. Sydenstricker, Augusta, Ga., professor of medicine, University of Georgia School of Medicine
- Dr. H. A. Vonachen, Peoria, Ill., medical director, Caterpillar Tractor Company
- Mr. Frank J. Walter, Denver, president, American Hospital Association

Also attending the meeting by invitation were these members of the Rehabilitation Advisory Council:

- Dr. Kendall Emerson, New York, managing director, National Tuberculosis Association
- Dr. Carl M. Peterson, Chicago, secretary, Council on Industrial Health, American Medical Association
- Dr. Donald C. Snelzer, Philadelphia, president-elect, American Hospital Association
- Dr. George Stevenson, New York, medical director, National Committee for Mental Hygiene
- Miss Catherine Worthingham, Palo Alto, Calif., president, American Physiotherapy Association

The committee, made up of twenty specialists in medical and allied fields, was appointed by Administrator McNutt to provide professional guidance in mapping the new state-federal program for medical and surgical care under the Barden-LaFollette act.

Physical restoration for the handicapped, so that they may as nearly as possible approximate normal capacity, was called the

basic need in vocational rehabilitation by Federal Security Administrator Paul V. McNutt. In opening the meeting he stressed the Federal Security Agency's desire to aid the states in providing physical restoration services which will conform to the high professional standards recognized by the national and state medical associations and by the hospital associations.

"To be able to count on themselves as workers," Mr. McNutt continued, "many of the disabled need more than vocational training, important as that is. They need medical care to restore as much physical capacity as possible. Doctors have long pointed out that tackling the complex problem of rehabilitation at any other point is putting the cart before the horse. Some of the states too have pioneered in providing for physical restoration, along with vocational training, for the handicapped. This service has now been recognized as an integral part of our national vocational rehabilitation program.

"We want to give the disabled—the men and women crippled in industry or by accident or illness—a chance to fulfil their rights and duties as citizens and as self-supporting wage earners. We want to do this because it is in line with the American way of looking out for ourselves. We want to do it now, because war industry needs every hand that can help."

An estimated million and a half persons may be eligible for rehabilitation under the program authorized by the enactment of the Barden-LaFollette bill last summer, according to a statement by Michael J. Shortley, director, Office of Vocational Rehabilitation.

Reporting the total active case load as 91,000 for the current year, he said that "the states indicate they will extend rehabili-

tation services to 110,000 disabled persons during the fiscal year 1945." The program is in operation in all forty-eight states, the District of Columbia, Hawaii and Puerto Rico. "Physical restoration rounds out vocational rehabilitation services. It gives us the chance," he said, "to do more things for more people."

The committee reviewed the basic plans, policies and regulations governing the program in a discussion led by Mr. Shortley. Plans for organization were brought before the committee by Dr. Dean A. Clark of the U. S. Public Health Service, who is chief medical officer for the Office of Vocational Rehabilitation. Particular consideration was given to the method of insuring that patients receive medical service of the highest quality. The committee stressed the importance of strong and well selected medical advisers for the state rehabilitation agencies to assure that satisfactory standards for the selection of specialists and facilities are established and followed in the state programs. In order to maintain high standards, the desirability of providing fair and adequate remuneration for the necessary services was emphasized.

The particular problems associated with the rehabilitation of persons having psychiatric disabilities, tuberculosis or orthopedic, cardiac, visual and auditory handicaps were discussed at length by the specialists of the committee. The committee also made recommendations on the scope of physical restoration services, auxiliary services in the fields of medical-social work, nursing, psychiatric social work, physical and occupational therapy, and definition of the policies and plans for various groups of disabilities.

AMERICAN BAR ASSOCIATION COMMITTEE REPORTS ON PARTS OF WAGNER-MURRAY BILL (S. 1161) RELATING TO FEDERAL REGULATION OF MEDICINE

At the meeting of the American Bar Association held in Chicago, Aug. 23-26, 1943, the House of Delegates on August 26 adopted the following resolution:

Resolved, That the Board of Governors be requested to appoint immediately a special committee to study, analyze and investigate Senate bill 1161, and that the Board of Governors give publicity to the recommendations and findings of such special committee and the action of the Board of Governors thereon; be it further

Resolved, That the House of Delegates is opposed to any legislation, decree or mandate that subjects the practice of medicine to federal control and regulation beyond that presently imposed under the American system of free enterprise.¹

In accordance with the foregoing resolution of the House of Delegates the undersigned committee was appointed by the Board of Governors.

ANALYSIS OF SENATE BILL 1161

The committee has given considerable study to title IX of the Social Security Act as amended by S. 1161 (title IX being herein sometimes referred to as section 11 of S. 1161 or as the Socialized Medicine bill). The entire bill covers 90 pages. It amends the Social Security Act approved Aug. 14, 1935² by adding under new titles the following subjects:

- I-A—Unified National Social Insurance System (p. 2);³
- I-B—A National System of Public Employment Offices (p. 3);
- II-A—Social Security Protection to Individuals Engaged in the Military Service (p. 26);
- VIII-A—Unemployment Compensation Allowances on Termination of Military Service (p. 36);
- IX—Federal Medical, Hospitalization and Related Benefits (p. 39);
- IX-A—Federal Social Insurance Contributions (p. 58);
- XII—Unified Public Assistance Program (p. 82).

While your committee is concerned only with title IX, having to do with federal medical, hospitalization and related benefits, it has been found necessary to give some study to title IX-A—Federal Social Insurance Contributions in order to estimate the amount of tax money and the number of individuals involved in the proposed socialized medical system.

It is impossible for the general public to secure an accurate idea of the Socialized Medicine bill. Being a part of an extensive piece of proposed legislation, on other parts of which it is dependent, and prepared in a form which has become popular in the past ten years, being replete with involvement, cross references, new terminology, percentages and other confusing matters, the socialized medicine chapter leaves the reader in utter confusion as to its meaning or extent. As an example of the verbiage that causes such confusion we cite the following: The bill appears to entitle every individual who is currently insured and has been found by the board to be eligible for benefits under title IX in a current benefit year to receive general medical, special medical, laboratory and hospitalization benefits after the effective date of the title.

Who is "currently insured"?

" . . . An individual shall be deemed to be 'currently insured' if it appears to the satisfaction of the board that (1) he had acquired not less than two quarters of coverage during the four calendar quarters immediately preceding the quarter in which he died or in which his disability began (excluding from such immediately preceding quarters any quarter for any part of which he was under a prior disability), or (2) during his eligibility period (as defined in title XI) he had been paid wages of (a) not less than \$150, and (b) not less than \$50 for each of not less than two calendar quarters." [Sec. 209(h) p. 24]

What is his "eligibility period"?

" . . . 'Eligibility period' means the first four of the last six completed calendar quarters immediately preceding the first day of a benefit year." [Sec. 1101 (a)(7), p. 73]

At great pains and with the expenditure of considerable time your committee has undertaken to analyze the Socialized Medicine title and break it down into simple language. To this end it has set out (1) the authority of the Surgeon General, (2) the authority and powers of the Social Security Board and (3) the cost of the scheme.

1. American Bar Association Journal, October 1943, p. 602.
2. 49 Stat. at L. p. 620, 42 U. S. C. A., sections 301 et seq.
3. Page references are to the printed bill, S. 1161.

The bill provides that every individual currently insured⁴ shall be entitled to receive general medical, special medical, laboratory and hospitalization benefits. Every dependent wife and child of and living with an individual who is currently insured is likewise entitled thereto [S. 1161, sec. 901(b) p. 39]. This includes thirty days' hospitalization each year, subject to an increase to ninety days per annum if the Surgeon General of the Public Health Service and the Social Security Board find that the Medical Care and Hospitalization Account are adequate [ibid. sec. 902 p. 40].

Authority of the Surgeon General.—The Surgeon General is authorized or required

(a) To take all necessary and practical steps to arrange for the availability of the benefits and of services to those entitled to the same⁵ [S. 1161, sec. 903(a) p. 40].

(b) To make and publish, with the approval of the Federal Security Administrator, such rules and regulations as may be necessary to enforce title IX [ibid. sec. 914 p. 55].

(c) To prescribe rules under which any physician legally qualified by a state to practice shall be qualified to furnish services [ibid. sec. 905(1) p. 44].

(d) To publish and make known in each area the names of general practitioners who have agreed to furnish their services [ibid. sec. 905(3) p. 44].

(e) To prescribe the maximum number of potential beneficiaries for whom a practitioner may undertake to furnish general medical benefit, which may be uniform nationally, or may be adapted to take account of relevant factors, as the Surgeon General may determine [ibid. sec. 905(10), p. 47].

(f) To prescribe rules and regulations under which every individual who is entitled to receive as a benefit services from a physician and who is permitted to choose from among those designated by the Surgeon General (except specialist services) may change his selection [ibid. sec. 905(2), p. 44].

(g) In any area where payment is on a per capita basis, to distribute on a pro rata basis among the practitioners selected in the area those individuals who have failed to make a selection, or who having made one have been refused by the practitioner [ibid. sec. 905(11), p. 47].

(h) To determine (with the Social Security Board) for any calendar year or part thereof that every individual entitled to benefits may be required by the physician furnishing the same to pay a fee with respect to the first service or with respect to each service in a spell of sickness or course of treatment, if such payment may be desirable to prevent or reduce abuses of entitlement to such benefit; to limit the application of such fees to home calls, to office visits or to both, to fix the maximum total amount of such fee payments in a spell of sickness or course of treatment, and to provide for differences in the size or total amount of fee payments for urban and rural areas and with regard for differences among states or communities [ibid. sec. 911(a), p. 51].

(i) To select and designate the specialists to serve and to determine the class of services each specialist shall furnish [ibid. sec. 905(4), p. 45].

(j) To approve payments from the Federal Social Insurance Trust Fund⁶ to practitioners and specialists which shall be made according (A) to a schedule of fees, (B) on a per capita basis, (C) on a salary basis for part or whole time or (D) a combination or modification of all of these, according in each area as the majority of general medical practitioners so paid shall elect, subject to necessary rules and regulations of the Surgeon General. Payments may be nationally uniform or "may be adapted to take account of relevant factors" [ibid. sec. 905(7)(8)(9), pp. 46, 47].

4 Any individual is deemed to be currently insured if it appears that (1) he had acquired not less than two quarters of coverage during the four calendar quarters immediately preceding the quarter in which he died or in which his disability began, or (2) during his eligibility period he had been paid wages of (a) not less than \$150 and (b) not less than \$50 for each of not less than two calendar quarters [ibid. sec. 209(b) p. 24]. "Eligibility period" means the first four of the last six completed calendar quarters immediately preceding the first day of a benefit year [ibid. sec. 1101(a)(7) p. 73].

5 There are two classes of benefits: (a) "general medical benefit" including all services generally performed by a practicing physician and (b) "special medical benefit" being services performed by a specialist with respect to any particular class of service [ibid. sec. 915(a)(b) p. 55]. No individual is entitled to any benefit if the illness or disability is covered by any workman's compensation law [ibid. sec. 909, p. 50].

6 The Federal Social Insurance Trust Fund consists of the securities held by the Secretary of the Treasury for the Federal Old Age and Survivors Insurance Trust Fund and the amounts standing to the credit of the Federal Old Age and Survivors Insurance Trust Fund on the books of the Treasury on Jan. 1, 1944, any other amounts as may be paid into or belong to the Trust Fund, and the contributions collected under title IX [ibid. sec. 969(a), p. 67].

(k) To publish a list of participating hospitals⁷ and revise the same from time to time by withdrawing therefrom existing hospitals or adding others [ibid. sec. 907(a), p. 49].

(l) To determine, with the approval of the Social Security Board, the amount to be paid for hospitalization benefit, which shall be not less than \$3 and not more than \$6 for each day of hospitalization, not in excess of thirty days, which an individual has had in a period of hospitalization; and not less than \$1.50 and not more than \$4 for each day of hospitalization in excess of thirty in a period of hospitalization; and not less than \$1.50 and not more than \$3 for each day of care in an institution for the care of the chronic sick. In lieu of such compensation, after approval by the Social Security Board, to enter into contracts with participating hospitals for the payment of the reasonable cost of hospital service, at rates for each day of hospitalization neither less than the minimum nor more than the maximum applicable rates specified in this subparagraph (l), such payment to be full reimbursement for the cost of essential hospital services, including the use of ward or other less expensive facilities [ibid. sec. 915(g), p. 57].

(m) To select hospitals for selected varieties of cases and institutions for the care of the chronic sick, and in doing so to take into account the purpose of such limited accrediting, the type and size of community which the institution serves, the availability of other hospital facilities, and such other matters as he may deem relevant [ibid. sec. 915(f), p. 56].

(n) To make findings of fact and decisions as to the status of any institution as a participating hospital⁸ in accordance with general standards previously prescribed by him after consultation with the council⁹ [ibid. sec. 907(b), p. 49].

(o) To negotiate agreements for supplies and commodities necessary for the benefits provided [ibid. sec. 903(b), p. 40].

(p) To limit (with the Social Security Board) for any calendar year or part thereof the cost of laboratory benefit which shall be borne by payments from the Trust Fund, and such limitation may be with respect to a class of services, supplies or commodities, with respect to maximum payments per beneficiary in a benefit year, with respect to a specified fraction of the cost or combinations thereof [ibid. sec. 911(b), p. 52].

(q) To determine what shall be included in laboratory benefits, including chemical, bacteriologic, pathologic, diagnostic and therapeutic x-ray, physical therapy, special appliances prescribed by a physician, and eye glasses [ibid. sec. 915(c), p. 55].

(r) To make provisions by which persons not entitled to benefits may use the services and institutions provided for the currently insured, for which the Trust Fund shall be reimbursed [ibid. sec. 903(b), p. 40].

(s) To negotiate agreements, approved by the Social Security Board, under which benefits may be furnished to individuals not entitled to the same for any period for which payments have been made, or assurances of such payments have been given by public agencies of the United States, of the several states or of their political subdivisions. The benefits shall be the same, so far as practical in each area, as those furnished to individuals entitled to such benefits [ibid. sec. 910(a), p. 50].

(t) Through agreement or cooperative working arrangement, use the services and facilities of other federal, state or municipal agencies [ibid. sec. 1108(b), p. 75].

(u) To negotiate agreements with public and private agencies or institutions or with private persons or groups, to utilize their services and facilities and to pay for the same [ibid. sec. 903(b), p. 40].

7. A participating hospital is an institution providing all necessary and customary hospital services, which is found by the Surgeon General to afford professional service, personnel and equipment adequate to promote the health and safety of individuals customarily hospitalized in such institution and to have procedures for the making of such reports and certifications as the Surgeon General and the Social Security Board may from time to time require, to assure that hospitalization benefit will be provided only to or on behalf of individuals entitled thereto [ibid. sec. 915(f), p. 56].

8. Any institution may file a petition with the Surgeon General to be included in the list of participating hospitals, the petition to set forth such information as the Surgeon General may deem necessary to establish that such institution meets the requirements of a participating hospital. Any institution whose petition the Surgeon General has denied may request a hearing with respect to the decision, and the Surgeon General shall grant such hearing and shall affirm, modify or reverse his prior decision [ibid. sec. 907(b), p. 49].

9. The National Advisory Medical and Hospital Council is organized by the Surgeon General. The Council is authorized to advise the Surgeon General with respect to professional standards, designation of specialists, methods to stimulate high standards through coordination of services of practitioners, specialists, laboratories and so on and of services of practitioners with those of educational and research institutions, hospitals and health centers; with respect to standards to apply to participating hospitals and the establishment and maintenance of a list of participating hospitals, adequate and suitable methods of paying for services, surveys and surveys of the services furnished by practitioners, and of the quality and adequacy of such services, grants of aid for research, education and research projects, and establishment of special advisory technical, local or regional boards, committees or committees [ibid. sec. 904 (c), pp. 41-5].

(v) To administer grants-in-aid to nonprofit institutions and agencies engaged in research or in undergraduate or postgraduate professional education, such grants-in-aid to be made with respect to each project (1) for which application has been received from a nonprofit institution stating the nature of the project and giving the reasons for the need of financial assistance in carrying it out, and (2) for which the Surgeon General finds that the project shows promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation and related benefits provided under the act, or to human knowledge with respect to the cause, prevention, mitigation or methods of diagnosis and treatment of disease and disability¹⁰ [ibid. sec. 1111, p. 77].

(w) To report to and recommend legislation to Congress not later than two years after the law becomes effective with respect to the most effective methods of providing dental, nursing and other needed benefits not already provided for under the title, and as to expected costs for the same, and the desirable division of the costs between (1) the financial resources of the social insurance system and (2) payments to be required of beneficiaries receiving such benefits [ibid. sec. 912, p. 53].

(r) To appoint a board known as the National Advisory Medical and Hospital Council, of which the Surgeon General is chairman, consisting of sixteen members, each member to hold office for four years and receive \$25 per diem for services in attending meetings and in the performance of other duties [ibid. sec. 904(a), p. 41].

(y) To establish necessary and sufficient hearing and appeal bodies to hear and determine complaints from individuals entitled to benefits, from practitioners who have entered into agreements and from participating hospitals, and to hear and determine disputes among practitioners and participating hospitals, and to take steps to remedy the grounds of complaint, if any [ibid. sec. 906, p. 48].

(z) To have all the powers conferred on the Social Security Board, by sections 205 and 206 of the Social Security Act as amended; and the provisions of subsections (e) and (f) of section 205 and section 208 shall be applicable in the same manner and to the same extent as they are applicable to title II of the Social Security Act¹¹ [ibid. sec. 1108(a), p. 74].

Authority and Powers of the Social Security Board.—(a) All agreements shall be negotiated by the Surgeon General and approved by the Social Security Board, except as to fixing rates for hospitalization [S. 1161, sec. 903(b), p. 40].

(b) The board is authorized to enter into compacts with the states, or with the political subdivisions thereof, for the purpose of extending medical and other benefits to the employees of such states or political subdivisions. Each such compact shall provide

(1) That the benefits shall be the same as for other employees covered by insurance programs;

(2) That the state or political subdivision shall pay the employers' and collect the employees' contribution;

10. For these purposes there shall be available for each calendar year 1 per cent of the total amount expended for benefits from the Trust Fund, exclusive of unemployment insurance benefits, or 2 per cent of the amount expended for benefits under title IX, after benefits have been payable for not less than twelve months, whichever is the lesser. The amount under the 2 per cent provision is estimated to be \$46,780,000 for 1942.

11. Section 205 (a) [42 U. S. C. A., section 405 (a)] authorizes the board to make rules and regulations and to establish procedures necessary or appropriate to carry out the provisions of the act, and to adopt reasonable and proper rules and regulations to regulate and provide for the nature and extent of the proofs and evidence and the method of taking and furnishing the same in order to establish the right to benefits hereunder. Section 205 (c) [42 U. S. C. A., section 405 (c)] provides that in case of contumacy by, or failure to obey a subpoena served on any person, the Surgeon General may by application to the district court have such person cited and ordered to comply with such subpoena, subject to punishment for contempt for his failure to comply with the order of the court. Under section 205 (f) [42 U. S. C. A., section 405 (f)] no person shall be excused from giving testimony on the ground that the same will incriminate him, but such person should not be prosecuted on account of any matter about which he is required to testify.

By Section 206 [42 U. S. C. A., section 406] the Surgeon General may prescribe rules and regulations governing the recognition of agents or other persons representing claimants before the Surgeon General and may, after due notice and opportunity for hearing, suspend or prohibit from further practice before it any such person, agent or attorney who refuses to comply with the rules and regulations prescribed by the Surgeon General. He may also prescribe the maximum fees which may be charged for services performed in connection with any claim before the Surgeon General, and a violation of such regulation shall be subject to a fine not exceeding \$500 or by imprisonment not exceeding one year, or both.

By section 208 [42 U. S. C. A., section 408] any person making any false statement or representation or affidavit in connection with any application for any payments shall be punished by fine of not more than \$1,000 or imprisonment for not more than one year.

(3) That the compact must be in effect at least five years before the state can give a two year notice to the Social Security Board of its purpose to terminate the compact;

(4) That all employees shall be covered by old-age, survivors, permanent disability, medical and hospitalization insurance, except that no employee shall be so covered while he is a beneficiary or contributory member to or possessor of an unrealized interest in any pension, annuity and benefit or retirement fund or any similar fund which is in existence at the date such compact is entered into or maintained by authority of any existing federal or state law [ibid. sec. 966(a)(b), p. 65].

(c) The board shall establish a Federal Social Security Advisory Council composed of men and women representing employers and employees in equal numbers and the public for the purpose of formulating policies and discussing problems relating to social security legislation and administration, and to insure impartiality, neutrality and freedom from political influence in the solution of such problems¹² [ibid. sec. 1112(a), p. 78].

The board may also establish such councils for any part of the Social Insurance System or for any geographic area of the United States [ibid. sec. 1112(b), p. 79].

Cost of Benefits.—The Medical Care and Hospitalization Account is established as a separate account within the Trust Fund, to which the managing trustee¹³ shall credit amounts equivalent to—

(1) One fourth of the social insurance contributions paid in by employers and employees, amounting to 6 per cent of wages¹⁴ payable by each class, or a total of 12 per cent.

(2) Three sevenths of (a) the contributions paid in by self-employed individuals, which is at the rate of 7 per cent of their remuneration not in excess of \$3,000 per annum; (b) social insurance contributions payable by states and political subdivisions thereof, and by employees thereof equal on the part of each class to 3.5 per cent of wages, falling within the scope of a voluntary compact under section 966 [p. 65].

This account shall include also applicable shares of interest, penalties and additions to the contributions and a proportionate part of the earnings of the Trust Fund, determined in accordance with the average daily balance to the credit of this account [S. 1161, sec. 913(a)(b), p. 53].

The amount in this account shall be available only for the payment of or provision for benefits and for administrative expenses under title IX [ibid. sec. 913(e), p. 54].

A sum is appropriated sufficient for all necessary expenses in carrying out the duties imposed on the Social Security Board and the Surgeon General by the act, including the making of such studies and demonstrations and such provisions for the training of personnel as may be expected to improve the quality of the services and promote the efficient administration of title IX; and for the pay, allowances and travel expenses of commissioned officers (regular and reserve), noncommissioned officers, and other personnel assigned to duty in carrying out the purposes of title IX and in connection with the administration of grants-in-aid [ibid. sec. 1109, p. 75].

12. The Advisory Council shall, from time to time, make findings and recommendations to the board, particularly concerning (1) the administration of the Social Insurance System with respect to self-employed, agricultural labor, domestic service, employees of nonprofit institutions and employees of federal, state and local governments; (2) the administration of federal medical, hospitalization and related benefits in areas in which facilities and personnel are not adequate; (3) the adequacy of the benefits provided under the Social Insurance System in relation to the wage levels, cost of living and employment patterns, particularly in the postwar period, taking into account the cost and any other relevant factors of any suggested alternatives; (4) the methods of financing and the amount and distribution of the contributions to the Social Insurance System in the postwar period [ibid. sec. 1112 (c), p. 79].

13. The Secretary of the Treasury [ibid. sec. 969 (b), p. 68].

14. "Wages" means all remuneration for employment except (a) that part in excess of \$3,000 per annum, (b) the amount of any payment under a plan or system established by an employer which provides for payment on account of (1) retirement, (2) sickness or accident disability, medical and hospitalization expenses in connection with the same, (3) death (except under conditions providing other or substitute benefits), (c) dismissal payments not required to be made or (d) value of services exchanged for other services and other unimportant exceptions [ibid. sec. 962 (a), p. 59].

THE COST TO THE PUBLIC AND THE NUMBER OF
PERSONS COVERED

From the face of the bill no one can estimate how much tax money is involved or how many people are covered; so your committee has sought information on which to base answers to these questions. Table 1, based on data provided by the Social Security Board and the Treasury Department, is self explanatory.

TABLE 1.—Estimated Employment in United States,^a
Years 1940-1942^b

	1940		1941		1942	
	Number Employed (Millions)	Wages (Billions)	Number Employed (Millions)	Wages (Billions)	Number Employed (Millions)	Wages (Billions)
Total employment covered by old age and survivor insurance.....	40.5	\$36.1	40.9	\$45.4	44.9	\$56.6
Total employed by state and local governments.....	a	a	3.3	3.7	3.3	3.7
Total employed under Railroad Retirement Act....	1.2	2.1	1.3	2.5	1.4	3.1
Total "civilian employment" ^a	46.0	\$44.0	48.8	\$54.1	51.9	\$67.6
Self employed:						
Farm owners and tenants.....			5.1		5.1	
Other.....			5.7		5.7	
Total self employed ^c			10.8	10.1	10.8	12.1
Total employment ^a			59.6	\$64.2	62.7	\$80.7

a. Does not include those listed in table 2.

b. Source: Social Security Year Book 1942, p. 26.

c. There may be an undetermined amount of duplication in total "civilian employment." It would not change the total to any appreciable extent, however.

d. We do not have the number of the total employed by the federal government and their wages for 1940. The total employed by federal, state and local governments for this year is 4.3 (millions) and the wages 6.8 (billions).

From table 1, if the Socialized Medicine bill had been in effect in 1942,¹⁵ the following would have resulted:

Social Insurance Contributions.—(a) By employers and employees,¹⁶ 7.168 billion dollars; (b) by self employed,¹⁷ 0.917 billion dollars; total, 8.085 billion dollars; (c) by state and local governments and employees,¹⁸ 0.259 billion dollars; total, 8.345 billion dollars.

Of the foregoing taxes there is required to be credited to the Medical Care and Hospitalization Account $\frac{1}{4}$ of (a), 1.792 billion dollars; $\frac{3}{4}$ of (b) and (c), 0.547 billion dollars; total, 2.339 billion dollars.

We come now to the number of people covered by the scheme: Total employed in industry, 44.9 million; total employed by state and local governments, 3.3 million; total employed under Railroad Retirement Act, 1.4 million; total self employed, 10.8 million; total covered, 60.4 million.

It should be kept in mind that the 3,000,000 federal employees are not included in the scheme by reason of section 962(b)(2) [p. 61], which in defining "employment" excludes services performed in the employ of the United States. The reason for this is that federal employees (in Washington) have their own medical system, which is maintained by a 5 per cent salary reduction.

15. There are so many variables to be considered, it is difficult to compare the number of those employed and the wages paid in 1943 with those in 1942. Nor are we able to secure the figures for 1943 from any governmental bureau. Among such variables are the following: Many women are being employed in war industries and in manufacturing plants to replace men who have entered the services. The wage rates of the women are considerably lower than those of the men whom they replace. This has a tendency to lower the average wage rate for 1943 as compared with 1942. In October 1943 the number of agricultural workers showed a decrease under October 1942 of about 1 million, owing largely to the absorption of workers in the Army. In manufacturing industries the average annual wage per worker in 1942 was \$1,906; in 1943 it was \$2,223, or an increase of 17.2 per cent. This is due, however, in large measure to overtime work by employees.

16. 12 per cent of wages [S. 1161, sec. 960, p. 581.

17. 7 per cent of income [ibid. sec. 963, p. 63].

18. 7 per cent of income; based on voluntary compacts with state governments [ibid. sec. 964, p. 64].

In 1940 there were 34,855,000 occupied dwelling units, or approximately that many families. In the same year there were 52,789,000 persons in the "labor force."¹⁹ This means that there were about 1.51 members of the labor force for each household. Thus it is almost certain that practically every family had at least one member included in the labor force, either at work or seeking work.

Accordingly, if every individual worker is covered by this act (as it appears he may be if his earnings are at a prescribed minimum) coverage must include practically all families in the United States. So with virtually complete family coverage by the act there would be few or no patients left for physicians who prefer private practice to becoming a part of the Socialized Medicine scheme.

SENATOR WAGNER'S INTERPRETATION OF THE BILL

When Senator Wagner (and Senator Murray) introduced S. 1161 on June 3, 1943 Senator Wagner made the following statement with reference to title IX:

"Freedom of Medical Practice: There is no plan here, such as that lately considered in Britain, for a system of socialized medicine, with all doctors required to be salaried employees of the government. Unlike this British proposal, my bill assures complete freedom of choice of doctor and hospital by the patient, and freedom of medical practice and types of remuneration for the doctor and the hospital. No doctor is forced into the insurance system or forced on a salary status. Arrangements for obtaining medical, laboratory or hospital care would be essentially as they are now in this country, except that payment for the care and services would be out of the insurance fund, built up through the insurance premiums paid by the individual and his employer. Voluntary hospitals would, of course, be eligible to participate in the plan if they choose to do so and thus be enabled to expand their splendid community services. Nonprofit group medical or hospitalization plans may also be utilized in carrying out the program, and they would be in a position to offer supplementary health protection for families desiring more than the basic social insurance benefits guaranteed under the bill. In all its provisions this bill would promote the personal relations between doctor and patient and be adapted to the needs and practices of the individual community, and the wishes of the doctors in that community, in both rural and urban areas. Similar basic principles as to medical and hospital benefits and freedom of medical practices are embodied in a program recently put forward by the government of Canada, with the full accord of the Canadian Medical Association and the Canadian Hospital Council."²⁰

TABLE 2.—Occupations of Workers

	Thousands
1. Agricultural workers, including sharecroppers.....	4,000-5,000
2. Unpaid family workers in agriculture.....	2,000-3,350
4. Domestic workers in private homes and fraternities.....	2,000-2,300
6. Casual employees	750-1,000
8. Workers in nonprofit organizations.....	700-1,000
9. Students employed by schools and colleges in which enrolled	25-40
10. Employees of foreign governments and their instrumentalities	15-25
11. Student nurses and interns.....	5-10
12. Persons engaged on work relief programs.....	1,750-2,000
13. Fishermen employed on vessels of 10 tons or less (except halibut and salmon fishermen).....	15-20
14. Newsboys under age 18.....	275-325
15. Other employees in miscellaneous occupations.....	100-300
Total.....	12,925-15,270

Source: Social Security Year Book 1942, p. 26, table 8.

Senator Wagner's Statement Not Accurate.—Of course Senator Wagner does not have the time to engage in the exhaustive studies necessary to enable him to discuss fully the effect of socialized medicine in this country and throughout the world. He must of necessity depend on his staff to provide these studies for him. He doubtless depends also on others who are active in promoting the measure.²¹ Those who have assisted the

19. U. S. Bureau of the Census.

20. Congressional Record 89:5344.

21. Inquiry from reliable sources in Washington indicates the probability that the actual designers and authors of S. 1161 are Isidore S. Falk and Wilbur J. Cohen, director and assistant director, respectively, of the Bureau of Research and Statistics of the Social Security Board, and Philip Levy, secretary to Senator Wagner.

Senator are not entirely accurate in some of their statements, and their conclusions and in some instances are entirely incorrect.

We point out the following inaccuracies in Senator Wagner's statement of June 3, 1943:

1. Senator Wagner states: S. 1161 is unlike the British proposal, which is the Beveridge plan with all doctors required to be salaried officers of the government.

The statement is misleading. Both plans look toward a system of medicine supervised, regulated and controlled by government. Under S. 1161 all doctors will be paid by the government, for in time there will be no private practice.

2. Senator Wagner states: There is complete freedom of choice of doctor by patient.

This is incorrect. If either the patient or the doctor named on the panel by the Surgeon General declines to accept the other, the patient is assigned to some other doctor.

3. Senator Wagner states: There is complete freedom of choice of hospital by patient.

This statement is incorrect. There is no provision for freedom of choice of hospital. The entire system is under regulation by the Surgeon General.

4. Senator Wagner states: There is freedom of medical practice for the doctor.

This is misleading. The plan is so extensive that in time there will be no private practice.

5. Senator Wagner states: There is freedom of types of remuneration for the doctor.

This is misleading. The doctor is forced on a salary or on a fee basis or on a combination of the two, as determined by the Surgeon General, who approves the fee tables.

6. Senator Wagner states: There is freedom of types of remuneration for the hospital.

This is incorrect. Hospital rates are determined by the Surgeon General with the approval of the Social Security Board.

7. Senator Wagner states: No doctor is forced into the insurance system.

This is misleading. He must go into the insurance system or be forced economically to cease the practice of medicine.

8. Senator Wagner states: No doctor is forced on a salary basis.

This is misleading. The doctor is forced on a salary or a fee basis, or on a combination of the two, as determined by the Surgeon General.

9. Senator Wagner states: Arrangements for obtaining medical, laboratory or hospital care would be essentially as they are now in this country, except as to payment out of the insurance fund.

This is entirely incorrect. The whole medical system is supervised, regulated and controlled by government.

10. Senator Wagner states: Voluntary hospitals are eligible to participate in the plan.

This is misleading. They may participate if selected by the Surgeon General.

11. Senator Wagner states: The system would promote the personal relations between doctor and patient.

This is an expression of opinion. The experience of foreign countries shows an opposite result.

12. Senator Wagner states: The Canadian system recently proposed is similar to S. 1161 and has the support of the Canadian Medical Association and the Canadian Hospital Council.

This is incorrect and misleading. The Canadian plan provides for its adoption by the provinces (or states) with a local full time doctor in charge. Both the Canadian Association and the Canadian Council are sharply critical of the plan.

Let us analyze Senator Wagner's statement further:

(1) The British Medical Association, which is comparable to the House of Delegates of the American Medical Association, at its meeting on Sept. 21-23, 1943 considered the Beveridge plan, although there was no definite legislative proposal available for consideration. No doubt Senator Wagner had this plan in mind in making his statement of June 3, 1943. The Beveridge plan contemplates a complete system of state medicine, with salaried physicians, involving the entire abolition of private medical practice. The report of the plan provides that the administration shall be confided to local governments with the minister of health in general supervision.

The action of the association was limited to statements of principles and general positions. By a vote of 200 to 10 the resolution was adopted opposing the creation of a whole time

salaried state medical service as not being in the best interest of the community.

The Representative Committee, which had been appointed to study the report, submitted an extensive report stressing, among other things, the necessity of free choice as between doctor and patient; that the loyalty and obligation of a doctor should be to the individual patient and to none other; that it was not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service; and that the state should not assume control of doctors rendering individual or personal health service.²²

It would therefore appear that the Beveridge plan retains elements of local control which do not exist in Senator Wagner's bill.

(2, 3) There is no "freedom of choice" of doctor by patient, as we know that term today. The statute permits every individual to select those from whom he shall receive services, but his selection must be confined to one or more physicians furnishing such services under the direction of the Surgeon General [S. 1161, sec. 905(1)(2), p. 44]. The patient may change his selection, but only according to rules and regulations prescribed by the Surgeon General [ibid. sec. 905(2), p. 44].

If a practitioner selected by any individual refuses to serve the latter, the individual may, with others, be "distributed" by the Surgeon General on a pro rata basis among the other practitioners [ibid. sec. 905(11), p. 47]. There is no provision for freedom of choice of hospital.

(4, 7, 8) It is true that under S. 1161 all doctors are not required to be salaried employees of the government. Doctors employed under the scheme may be paid fees, or both salary and fees, as the Surgeon General directs. "All" doctors may not be a part of the system, but the coverage is so great that little if any practice is left for the doctor who does not wish to become a part of the system.

(5) There is no freedom of remuneration for the doctor. The Surgeon General has full authority to approve payments to practitioners according to a schedule of fees, or on a per capita basis, or on a salary basis for whole or part time, or a combination or modification of all these. The statute [ibid. sec. 905(7), p. 46] on its face appears to give the practitioner some freedom, but the ultimate authority is in the Surgeon General, as all payments are "subject to such necessary rules and regulations as may be prescribed" by the Surgeon General.

(6) Nor has the hospital any freedom with respect to remuneration. The Surgeon General [ibid. sec. 907(a), p. 49] with the approval of the Social Security Board determines the amount to be paid for hospitalization, varying from \$1.50 to \$6.00 per diem [ibid. sec. 915(g), p. 57].

(10) Voluntary hospitals are eligible, but subject to all the rules and regulations governing participating hospitals [ibid. sec. 907(a), p. 49; sec. 915(f)(g), pp. 56-57].

(11) Under our system of government and American way of life a plan of medicine directed from Washington would not "promote the personal relations between doctor and patient, and be adapted to the needs and practices of the individual community, and the wishes of the doctors in that community, in both rural and urban areas, . . ." It is inevitable that such a plan would seriously disturb the existing intimate relationship between doctor and patient.

(12) It is not correct that similar basic principles as to medical and hospital benefits and freedom of medical practices are embodied in a program recently put forward by the government of Canada, with the full accord of the Canadian Medical Association and the Canadian Hospital Council. The Dominion of Canada recognizes and respects its constitutional limitations. S. 1161 is utterly beyond the powers of Congress.

For Senator Wagner to compare his bill favorably with the proposed Canadian measure is not justified. The Canadian plan provides for the adoption by each province of a model bill which the Dominion has drafted for the guidance of the provinces in framing their legislation. The Canadian government has no constitutional power to impose such a plan. It only proposes the plan and extends a subsidy to the provinces

which adopt it. The question arises among the provinces whether or not the Dominion by this indirect procedure is not interfering with the autonomy of the provinces, by encroaching on the right given them under the British-North America Act to legislate as they see fit on matters of health.

Another fundamental difference between S. 1161 and the Canadian plan is in its administration. Under S. 1161 the entire plan is administered by one man from Washington. In each Canadian province the act would be administered by a commission appointed by the Lieutenant-Governor-in-Council. Its chairman must be a doctor of medicine. He would be its chief executive officer and would have supervision over all other officers appointed to carry out the work of the commission. His fellow members on the commission would be men or women representative of the various professions rendering service under the act, including hospitals, and of industrial workers, employers, agriculturists and such other groups as it may be deemed desirable to recognize. The chairman would devote his whole time to the work of the commission and would be its only salaried member. Other members would be paid a per diem allowance for attending meetings. All persons employed to conduct the work of the commission would rate as civil servants and must be appointed in the manner prescribed by the Civil Service Act.

Thus the system in the provinces is removed from over-all control from the seat of government and there remains to it all the elements of home rule.

The insured may select from the list of practitioners who have agreed to attend insured patients any one he wants as his medical adviser, subject only to the willingness of the latter to accept him as a patient. The total cost per annum would be \$250,000,000.²³ This figure is to be compared with approximately \$3,000,000,000 in this country.

MEDICAL SERVICE IN THE UNITED STATES AND THE EFFECTS OF THE MEASURE ON SUCH SERVICE

1. Under the medical care now provided in the United States the highest level of health and the lowest death rate ever known under similar conditions are being maintained.
2. There are being developed in this country and under our system of free enterprise many plans for providing adequate medical care without paying the price of socialized medicine. These include group and hospital insurance and Blue Cross plans under principles approved by the medical profession. The Blue Cross plan beginning in 1933 and now covering more than fifteen million people provides for the moderate means class, on which hospital bills fall heavily.
3. The indigent, who are most in need of free medical care, are not covered by S. 1161.
4. Forty-two per cent of the expenditures for hospital services and for doctors' services rendered hospital patients in 1942 were either tax supported or otherwise without cost to the patient and without recourse to federal regulation and control as proposed.
5. Of all like plans now in effect in foreign countries, none is comparable with the plan proposed by S. 1161 except the Russian system, which involves the complete socialization and regimentation of medicine. Such a pattern, if followed in this country, will inevitably produce a like result. The physician will become merely an unambitious federal employee or a politically ambitious doctor.
6. Contrary to assertions of the advocates of the measure, the plan covers practically the entire population of the United States except the indigent.
7. To safeguard a minimal percentage of the population which has difficulty in obtaining complete medical service, the bill would put all the people in a medical strait jacket under the supervision of the federal government for an alleged service which the vast majority either do not require or are able to provide for themselves.
8. The measure will inevitably lessen the interest of the physician in his patient as an individual and dull the incentive

to produce the best results. The patient will become the guinea pig supplied by the government as the excuse for the payment of subsidies to a controlled profession for its routine services. This would disturb the social order of which both are members and result in vital loss both to the community and to the doctor.

9. The measure will subject to bureaucratic control and supervision the intimate and confidential relationship between doctor and patient and make confidential information resulting therefrom available to employees of the government.

10. Medical education and training, which have attained an unequaled standard of excellence in institutions conducted under our system of free enterprise, would under S. 1161 be subsidized, regulated and controlled by government.

11. Within the past twenty years the center of medical progress has moved from Germany, Austria and England, which have adopted some form of state medicine and which previously served as centers of postgraduate medical education, to the United States, and we now find physicians and hospital administrators coming for guidance and inspiration to this country, where no form of state medicine is in effect.

CONCLUSION

The American Bar Association is limited to an expression of opinion and judgment with respect to those fields which relate to the administration of justice and which directly affect the safeguards and protection of the rights and liberties of the citizens of this country. Under normal circumstances, therefore, it is not the function of this association to attempt to influence substantive legislation by the Congress of the United States. But when under the pretext of the general welfare legislation is proposed in Congress which either inadvertently or with deliberate subtlety constitutes a direct attack on the rights and liberties of the citizens of this country, it becomes the duty of this association actively to voice its objections, a summary of which is as follows:

1. Local self government must be preserved in our federal system. State governments directly responsible to the will of the people are best adapted to exercise such supervisory control as may be instituted over the health and medical care of our citizens.
2. S. 1161 seeks to invest in the Surgeon General, who is not an elected servant of the people and who is not amenable to their will, the power arbitrarily to make rules and regulations having the force and effect of law which directly affect every home.
3. The measure furnishes the instrumentality by which physicians for their practice, hospitals for their continued existence and citizens for their health and that of their families can be made to serve the purposes of a federal agency.
4. The bill fails to safeguard the rights of patients, citizens, hospitals or doctors with respect to disputes arising or rights denied through the arbitrary or capricious action of one man.
5. The bill fails to provide for any appeal to any court from the action of the Surgeon General.
6. The vicious system whereby administrative officials judge without court review the actions of their subordinates in carrying out orders issued to them is extended in this bill to a point foreign to our system of government and incompatible with the adequate protection of the liberties of the people.
- The Constitution of the United States is designed to protect the citizens of this republic in the exercise of the rights of free men. The provisions of that instrument can be rendered impotent when our citizens, for the sake of an apparent immediate benefit, surrender to their government such direct control over their lives that government, by imposing a constant fear on them of having those benefits withheld or withdrawn, can compel from them obedience and subservience to its dictates.

Respectfully submitted,

W. E. STANLEY, Chairman,
WILLIAM LOGAN MARTIN,
CLEMENT F. ROBINSON.

23. Health Insurance for Canada, Research Bureau Pharmaceutical Manufacturers' Association, Toronto, pp. 3, 4, 8, 9, 10, 19.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Popular Medical Lectures.—The sixty-second course of popular medical lectures will be held at Lane Hall, Stanford University School of Medicine, San Francisco. The group will include the following speakers, all of San Francisco:

Dr. William H. Northway, Treatment of Infantile Paralysis, March 17.
Dr. Albert V. Pettit, Caudal Anesthesia in Obstetrics, March 31.
Nina Simmonds, Sc.D., Nutrition: One Factor in the Health Program, April 14.
Dr. Horace Gray, Psychologic Types and Marriage, April 28.

Special Service Fund.—The San Francisco County Medical Society has established a special service fund to assist service men and their families in case of need. The funds will be used not only to help returning members during their time of readjustment but to help wives, families and service widows at any time before peace comes. Any one knowing of the need of a member's family is asked to notify Dr. Dolrmann K. Pischel, San Francisco, chairman of the special service fund committee.

Hamilton Anderson Named Professor of Pharmacology.—Dr. Hamilton H. Anderson, recently returned on the S. S. *Gripsholm* from his position as professor and head of the department of pharmacology, Peiping Union Medical College, Peking, China, has been appointed professor of pharmacology at the University of California Medical School, San Francisco. The appointment, effective February 1, fills the vacancy that occurred when Chauncey Leake, Ph.D., resigned to become vice president and dean of the University of Texas Medical Branch, Galveston. Dr. Anderson graduated at the University of California Medical School in 1930 and served as a member of the staff until 1937, when he joined the Council on Medical Education and Hospitals of the American Medical Association. He resigned this position to accept the Rockefeller Foundation appointment as professor of pharmacology at Peking University.

CONNECTICUT

Yandell Henderson Dies.—Yandell Henderson, Ph.D., an authority on gases and professor of physiology emeritus, Yale University, New Haven, died in Scripps Memorial Hospital, La Jolla, Calif., February 18, aged 70. Dr. Henderson had been suffering from an intestinal ailment for a year.

State Society Plans New Home.—At a special meeting of the house of delegates of the Connecticut State Medical Society in December it was decided to establish a permanent home in New Haven. The trustees of the building fund are now working on the acquisition of properties that might be available for suitable headquarters.

DISTRICT OF COLUMBIA

Annual Graduate Course in Ocular Surgery.—The George Washington University School of Medicine will conduct its seventh annual postgraduate course in ocular surgery, pathology and orthoptics, April 24-29. The instructors in the pathology course will include Col. James E. Ash, M. C., U. S. Army, curator of the Army Medical Museum, Major Alfred Golden, M. C., A. U. S., Helenor Wilder and Lawrence Ambrogio. The orthoptics course will be conducted by Dr. William Thornwall Davis, Dr. Ernest A. W. Sheppard, Dr. Frank D. Costenbader, Louisa Wells, Mary E. Kramer, Dorothy R. Bair and Mildred Brown. Additional information may be obtained from Miss Wells, 927 17th Street N.W., Washington.

GEORGIA

Personal.—Joseph C. Bequaert, Ph.D., and Dr. Everett P. Veatch, Bolahun, Liberia, recently went by plane to Liberia to carry on six months' research on African sleeping sickness.

Full Professors at Emory.—Emory University School of Medicine, Atlanta, has conferred full professorships on:

Dr. Cosby Swanson, professor of dermatology.
Dr. William Walter Young, professor of neurology and psychiatry.
Dr. Madison Hines Roberts, professor of pediatrics.
Dr. Frederick G. Hodgson, professor of orthopedic surgery.
Dr. Milus K. Bailey, professor of urology.
Dr. Grady E. Clay, professor of ophthalmology.
Dr. James Calhoun McDougall, professor of otorhinolaryngology.

ILLINOIS

Society News.—Dr. Leon Unger, Chicago, will discuss "Allergies, Hay Fever and Asthma" before the Kankakee County Medical Society, Kankakee, March 14.—The Will-Grundy County Medical Society was addressed March 10 in Joliet by Dr. Newell C. Gilbert, Chicago, on "Rheumatic Heart Disease."

Chicago

Dr. Major to Address Medical History Society.—Dr. Ralph H. Major, Kansas City, Mo., professor of medicine and lecturer in the history of medicine, University of Kansas School of Medicine, will deliver a lecture in the assembly room of the Institute of Medicine of Chicago April 4 under the auspices of the Society of Medical History of Chicago. The subject of his illustrated address is "Hippocrates and the Island of Cos."

KANSAS

Personal.—Dr. Fred H. Rhoades, Hanover, has been appointed health officer of Washington County.—Dr. Orlin P. Wood, Marysville, was appointed health officer of Marshall County to succeed Dr. Enoch Schumann, Blue Rapids.

Health Department in New Home.—The Kansas City-Wyandotte County Health Department is now located in its new home at 619 Ann Avenue. The three story red brick building contains accommodations for administrative offices. On the second floor are quarters of the sanitarians and milk inspectors; the laboratory, clinic and health inspection rooms are housed in the basement. William H. Pickett, surgeon, U. S. Public Health Service Reserve, is director of health of the city-county health unit.

MASSACHUSETTS

Personal.—Dr. Robert B. Osgood, John B. and Buckminster Brown professor of orthopedic surgery emeritus, Harvard Medical School, Boston, was granted honorary fellowship in the Royal College of Surgeons of England at a ceremony in the British Embassy in Washington, November 8.

Tufts Alumni Dinner.—The annual meeting and dinner of the Tufts Medical Alumni Association will be held on March 29 at the Copley Plaza Hotel, Boston. The guest speaker will be Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, who will discuss "Probable Changes in Practice of Medicine Harmful to Patient If Bills Now Pending in Washington Become Law." Other speakers will include Leonard Carmichael, LL.D., president of Tufts College, on "Our First Fifty Years as a Prelude to Greater Things," Dr. Alonzo K. Paine, Boston, president of the alumni association, Capt. A. Warren Stearns (MC), U. S. Naval Reserve, dean-on-leave, and Dr. Karl T. Phillips, Putnam, Conn.

MICHIGAN

Personal.—George B. Darling, Dr.P.H., who recently resigned as president and comptroller of the W. K. Kellogg Foundation, Battle Creek (*THE JOURNAL*, Nov. 27, 1943, p. 849) is now executive secretary of the committee on military medicine of the division of medical science of the National Research Council, Washington, D. C.—Dr. Roger V. Walker has been appointed a member of the Detroit Board of Health to succeed the late Dr. Frank A. Kelly.—Dr. James Milton Robb recently presented to the Wayne University College of Medicine, Detroit, a fund for the use of the Alpha Omega Alpha Scholarship and Lectureship Foundation.

MISSOURI

License Suspended.—The license to practice medicine of Dr. Leo J. Barken, University City, was suspended by the state board of health, January 24, for a period of two years. The suspension is based on the conviction of Dr. Barken in the federal court for violation of the Harrison Narcotic Act.

The Narr Fellowship Foundation.—The Frederick C. Narr Fellowship Foundation has been incorporated to carry on the activities of the late Dr. Narr in providing financial assistance to young medical students and interns. Dr. Robert Lee Hoffmann is president of the corporation, Dr. Fred B. Kyger treasurer and Dr. Oliver S. Gilliland secretary. Trustees are Drs. Robert C. Davis, Sam E. Roberts and Ira H. Lockwood, all of Kansas City. According to the *Weekly Bulletin* of the Jackson County Medical Society, a fund of \$2,000 now available will be augmented to continue Dr. Narr's activities. In 1923 Dr. Narr became head of the Williams Volker Laboratory of Research Hospital, Kansas City, a position he held until his death on Sept. 2, 1943. Because of his full time activity with the hospital he became chairman of the committee on residents and interns and in this capacity personally gave

financial assistance to these men to help place them in the proper position in the medical world. In many instances he lent money, signed notes of security and counseled. The new fellowship foundation will attempt to extend this work. The proformatum decree of incorporation of the foundation, effective January 31, states that the new group's purposes are:

To aid and assist medical students, interns, residents, fellows, in continuing the study of medicine and surgery, and the pursuit of any and all allied branches of the medical science and art, including research, by furnishing to such individuals, as a board of trustees held from time to time, designate gifts, loans or advances to pay tuition, or other expenses incurred by or for such individuals in the attendance of medical school, hospitals, and research institutions.

MONTANA

Personal.—Dr. Albert D. Brewer has resigned as city-county health officer of Bozeman and Gallatin County to become staff physician at the Montana State Tuberculosis Sanitarium, Deer Lodge.—Mr. Herbert T. Walworth, for three years director of the division of industrial hygiene, Montana Department of Public Health, Helena, has resigned to become industrial engineer of the Tennessee Department of Public Health, Nashville.

NEW YORK

Graduate Lecture on Tropical Medicine.—Morton C. Kahn, Ph.D., associate professor of public health and preventive medicine, Cornell University Medical College, New York, will lecture on "Mosquito Borne Diseases" before the Saranac Lake Medical Society, April 5, at Saranac Lake. The lecture is sponsored cooperatively by the state department of health and the state medical society.

New York City

Instruction in Tropical Medicine.—A course in certain aspects of tropical medicine will be conducted at the DeLamar Institute of Public Health, Columbia University College of Physicians and Surgeons, March 20-May 13. Additional information may be had from the institute at 600 West 168th Street, New York 32.

The Sixth Harvey Lecture.—John W. Oliphant, Surgeon, U. S. Public Health Service, division of infectious diseases, National Institute of Health, Bethesda, Md., will deliver the sixth Harvey Society Lecture of the current series at the New York Academy of Medicine on March 16. His subject will be "Jaundice Following Administration of Human Serum."

Personal.—Dr. Condict W. Cutler Jr., director of surgery at Goldwater Memorial Hospital on Welfare Island and an alumni trustee at Columbia University, has resigned to accept a commission as lieutenant colonel in the army medical corps.—Dr. Israel Leopold Glushak has been invited to open a reconstruction surgical clinic in connection with the private hospital of Dr. Manuel de la Pila Iglesias at Ponce, Puerto Rico. This clinic will devote a large portion of its services to the subnormal income groups in Puerto Rico, the territorial department of the government assuming the expense of their hospitalization, according to the *Journal of the Medical Society of the County of New York*.

Postwar Emergency Fund.—The Bronx County Medical Society has agreed to assess its members to promote the collection of funds to aid members returning from military service to reestablish their private practice in the postwar period of readjustment. The action was approved in a resolution passed by the society. The fund will be administered by a loan committee of the group and will be known as the Post War Emergency Loan Fund. It was decided further that at the end of a period of emergency, as determined by the society, the fund will be known as the general fund of the Bronx County Medical Society, to be used for purposes beneficial to the society as determined by a two thirds vote of the membership present at any society meeting.

NORTH CAROLINA

Hospital News.—The Guilford General and the Burrus Memorial hospitals, High Point, were merged recently under the name of High Point Memorial Hospital. The Burrus Memorial has been designated as the Boulevard Unit and the other as the Washington Street Unit. J. P. Richardson, administrator of the Burrus Memorial, is director of the combined unit, and W. R. Peters, business manager of the Guilford General Hospital, will become business manager of the new institution.

Dr. Tinsley Harrison Goes to Texas.—Dr. Tinsley R. Harrison, professor of medicine at Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, has been appointed dean of Southwestern Medical College of the South-

western Medical Foundation, Dallas, effective immediately. Dr. Harrison will also serve as executive professor of experimental medicine and professor of medicine. He graduated at Johns Hopkins University School of Medicine, Baltimore, in 1922. He is a past president of the American Society for Clinical Investigation and is now chairman of the Section on Experimental Medicine and Therapeutics of the American Medical Association. According to Mr. Mac F. Cahal, executive secretary of the foundation, additional temporary buildings will be constructed near the site of the projected medical center to house the department of experimental medicine. Additional professors and research workers will be employed for the new department. Dr. Donald H. Slaughter, Dallas, formerly acting dean of the medical college, will remain as dean of students.

OHIO

Personal.—Dr. John Sraile has resigned as superintendent of the Tuscarawas Valley Sanatorium, New Philadelphia, effective February 1, to become clinician for the Washington Tuberculosis Association at Seattle.

University News.—The Research Foundation at Ohio State University, Columbus, has made available grants of \$35,000 to the university to stimulate and foster research in the basic science; \$5,000 will be available for surgical and medical research.

OKLAHOMA

Society News.—The Pottawatomie County Medical Society was addressed on March 7 among others by Dr. Percy S. Pelouze, Philadelphia, on "Control of Gonorrhea from a Public Health Standpoint."—The Oklahoma City Internist Association sponsored a clinic at the University Hospitals on February 22.

Personal.—Dr. Felix T. Gastineau has been appointed acting director of the student health service at the University of Oklahoma, Norman, succeeding Dr. William A. Fowler, who has gone to the University of Arkansas, Fayetteville.—Anderson Nettleship, P. A. Surg., U. S. Public Health Service Reserve, Bethesda, Md., has been appointed associate professor of pathology at the University of Oklahoma School of Medicine, Oklahoma City.

OREGON

Tuberculosis Program.—X-ray equipment has been purchased with funds subscribed by the Oregon Tuberculosis Association, the city of Portland and Multnomah County, to be housed in a clinic which will be operated by the Portland City Health Department. When the program gets under way the clinic will supervise follow-up case finding among family contacts of the tuberculous persons found in the Portland area by the recently created state division of tuberculosis control.

University News.—The University of Oregon Medical School, Portland, has purchased the Portland Medical Hospital on Marquam Hill to use as a dormitory to house student nurses, in keeping with the provisions of the cadet nurse corps program. Dr. Matthew C. Riddle, associate professor of medicine, and Harry J. Sears, Ph.D., professor of bacteriology at the university, are studying tropical diseases in Central America as an aid to wartime medical instruction. Dr. Riddle flew directly to Central America, but Dr. Sears will spend two months in the Army Medical School, Washington, D. C., before proceeding to Costa Rica, Honduras and Guatemala.

RHODE ISLAND

Advisory Council on Health.—On February 5 Gov. J. Howard McGrath activated a thirty-five member state voluntary advisory council on health to carry on an overall survey of health facilities and needs of the state. The program is the result of a suggestion made recently by Dr. Emery M. Porter, past president of the Providence Medical Association, that a statewide survey be conducted by a nonpartisan, representative council. The suggestion of Dr. Porter to create a twenty-five member council by the state medical society was endorsed by the society, but it was agreed to acquiesce in allowing the governor to name the council which he suggested. Using Dr. Porter's outline as a basis, the governor has enlarged the list to include representatives of insurance, the veterans, pharmacy and osteopathy. The new council includes eleven doctors of medicine, including the state director of health and one doctor representing the state hospital association, a dentist, a nurse, an osteopathic physician, two representatives of veterans' organizations, two representatives of organized labor, two representatives of industry, three insurance representatives, one of the Blue Cross, one of private insurance and one of the state director of insurance, two

representatives of social agencies, two attorneys at law, one representative of pharmacy, two representatives of the state department of social welfare and five representatives of the public generally, including two clergymen, a banker and an executive secretary. Dr. Michael H. Sullivan, Newport, president of the state medical society, is chairman of the council, Dr. Elihu S. Wing, Providence, vice chairman and Mr. Glen Leet, state administrator of public assistance, department of social welfare, Cranston, executive secretary. Other members of the council include:

Frank J. Benti, president, Rhode Island State Congress of Industrial Organization, Providence.
 Frederick S. Blackall Jr., president, Taft-Pierce Mfg. Co., Cumberland.
 Rt. Rev. Msgr. Peter E. Blessing, Providence.
 Rev. Arthur H. Bradford, Pastor, Central Congregational Church, Providence.
 J. Austin Carroll, state commissioner of insurance, Providence.
 Thomas W. Clune, D.D.S., Cranston.
 Edward L. Coman, insurance executive, South Kingstown.
 Miss Nellie R. Dillon, R.N., president, Rhode Island District Nursing Association, Providence.
 Dr. John E. Donley, Providence.
 John E. Farrell, executive secretary, Rhode Island Medical Society, East Providence.
 Dr. Albert H. Jackvony, president, Providence Medical Association, Providence.
 Dr. Henry E. Gauthier, Woonsocket.
 Christopher Hopkins, president, Rhode Island State Branch, American Federation of Labor, Providence.
 Walter F. Farrell, president, Union Trust Co., Providence.
 Dr. John P. Jones, Wakefield.
 Ernest I. Kileup, president and treasurer, Davol Rubber Co., Barrington.
 Mrs. Susan V. Lamb, chairman of legislative committee, State Association of Local Directors of Public Welfare, West Warwick.
 Judge Edward L. Leahy, Director, State Department of Finance, Bristol.
 Arthur J. Levy, president, Providence Council of Social Agencies, Cranston.
 Robert O. Loosely, executive director, United War Fund, Providence.
 Dr. Edward A. McLaughlin, State Director of Health, Providence.
 Eugene U. Messier, State Department Commander, Veterans of Foreign Wars, Central Falls.
 Cornelius C. Moore, Attorney at Law, Newport.
 Alexander Pausley, D.O., Providence.
 Dr. Herman C. Pitts, chairman, medical economics committee, Rhode Island Medical Society, Providence.
 Dr. Dennett L. Richardson, president, Hospital Association of Rhode Island, Providence.
 W. Henry Rivard, Pharm.D., Dean, Rhode Island College of Pharmacy & Allied Sciences, Providence.
 Dr. Arthur H. Ruggles, superintendent, Butler Hospital, Providence.
 Stanley H. Saunders, executive director, Hospital Service Corporation of Rhode Island, Providence.
 Dr. Stanley Sprague, Pawtucket.
 Harold B. Tanner, attorney at law, Providence.
 George E. Withington Jr., commander, American Legion Department of Rhode Island, Providence.

SOUTH CAROLINA

Medical Society Buys House for Nurses' Home.—The Medical Society of South Carolina, the Charleston County Medical Society, as trustee under the will of Thomas Roper, has purchased a house on the corner of Calhoun Street and Ashley Avenue, newspapers report. The residence will be used as a supplementary nurses' home to assist in the government's program to accelerate the training of nurses for army, navy and civilian needs, as well as to care for the increase of patients at Roper Hospital, Charleston.

TEXAS

Appointments to Southwestern Faculty of Medicine.—New appointments to the full time faculty of Southwestern Medical College of the Southwestern Medical Foundation, Dallas, include:

Simon Edward Sulkin, Ph.D., formerly instructor in bacteriology and immunology at Washington University School of Medicine and director of the virus laboratory, St. Louis Health Division, associate professor of bacteriology.
 Dr. Atticus J. Gill, formerly assistant professor of pathology, University of Tennessee College of Medicine, Memphis, assistant in pathology.
 Robert Merrett Pike, Ph.D., formerly bacteriologist and assistant director of Bassett Laboratories, Cooperstown, N. Y., assistant professor of bacteriology.

Sixty-one students will be graduated from the new school on March 20.

Anderson Cancer Hospital Dedicated.—The M. D. Anderson Hospital for Cancer Research, Houston, was dedicated February 17. Dr. Ernst W. Bertner, acting director of the hospital, presided at the ceremonies, which included the following speakers:

Hon. Coke Stevenson, governor of Texas.
 John H. Bickett Jr., chairman, board of regents, University of Texas Medical Branch, Galveston.
 Col. W. B. Bates, board of trustees, M. D. Anderson Foundation.
 Homer P. Rainey, Ph.D., president, University of Texas.
 Hines Baker, chairman, development board, University of Texas.
 Chauncey Leake, Ph.D., vice president and dean, University of Texas Medical Branch, Galveston.
 Dr. Bowman C. Crowell, Chicago, associate director, American College of Surgeons.

Dr. Fred W. Stewart, acting director, Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York.
 Dr. Frank E. Adair, chief surgeon, Memorial Hospital.
 Dr. Lauren V. Ackerman, director, Ellis Fischel State Cancer Hospital, Columbia, Mo.
 Dr. Hugh H. Young, director, Brady Urological Institute, Johns Hopkins Hospital, Baltimore.
 Clarence C. Little, Sc.D., managing director, American Society for the Control of Cancer, New York.
 Hon. Otis Massey, mayor of the city of Houston.
 Dr. Charles S. Venable, San Antonio, president, Texas State Medical Association.

The hospital is located temporarily at 2310 Baldwin Avenue in the former home of the late Capt. James A. Baker. Activities at the new hospital were to start March 1. The project is financed jointly by the state of Texas and the M. D. Anderson Foundation. It will function under the direction of the University of Texas. It was initiated when the forty-seventh legislature created a Texas state cancer hospital and a division of cancer research under the control and management of the University of Texas. An appropriation of \$500,000 was made for the location, equipping and establishing of the hospital, half earmarked for building and equipment, the remainder for employing a staff and for research, study, experiments, treatment and maintenance. This appropriation was matched by a \$500,000 gift to the university by the Anderson Foundation to supplement the legislative funds available for building and equipment. In addition the foundation offered to provide a site for the hospital. Eventually the site will be in the medical center that is being projected for a 134 acre site adjacent to Hermann Park, which the foundation has purchased from the city of Houston. When the war intervened it was decided to use the former home of Captain Baker as a temporary location in order that the research work might be started. One hundred and twenty-five beds will be available in Hermann Hospital eventually, but for the time being only 25 hospital beds will be available there. The service will include a diagnostic center, to which any physician in the state can send questionable tissue for diagnosis, and a statewide necropsy service. Patients from all over the state will be admitted for treatment. Only those will be accepted who have a chance to be cured. Eventually the hospital will accept part pay and full pay patients as well as indigents, but until the program gets fully under way only indigents will be admitted. Admission of indigents will be on certification of their county judge after examination by a physician and after investigation by the social service staff of the hospital.

VERMONT

University News.—Bennett C. Douglass, Ph.D., professor of education at the University of Vermont, Burlington, recently conducted several conferences with the faculty of the college of medicine on teaching and teaching methods. Dr. Louis S. Goodman, professor of pharmacology and physiology at the medical school, lectured before the Northeastern County Medical Society, February 23, on "Recent Advances in Drug Therapy."

GENERAL

Special Society Election.—Dr. Rolla E. Dyer, Bethesda, Md., was chosen president-elect of the annual meeting of the American Society of Tropical Medicine recently and Dr. Wilbur A. Sawyer, New York, was inducted into the presidency. Other officers include Dr. Harold W. Brown, New York, vice president, and Dr. Joseph S. D'Antoni, New Orleans, secretary-treasurer. Col. Charles F. Craig, M. C., U. S. Army, retired, 239 West Lullwood Avenue, San Antonio, Texas, is the editor of the *American Journal of Tropical Medicine*.

Federation of American Societies.—The Federation of American Societies for Experimental Biology, by vote of the executive committee, will not hold an annual meeting in 1944. Through the medium of the *Federation Proceedings*, however, provision will be made for the publication of abstracts of papers which would have been presented if it had been feasible to hold such a meeting. Similarly provision will be made for the full publication of papers contributed to several symposiums. This arrangement corresponds to that which was made in 1943, when the annual meeting was canceled. It was announced that a meeting will be held in Cleveland May 8-10, 1945 unless some unforeseen difficulty arises. The federation is composed of the American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Society for Experimental Pathology, American Institute of Nutrition and the American Association of Immunologists.

War Conference on Industrial Health.—A war conference on industrial health, comprising the 1944 annual meetings of several national organizations concerned with industrial hygiene, will be held at St. Louis May 9-14 in the New Jef-

erson Hotel. The National Conference of Governmental Industrial Hygienists will meet all day on May 9. The American Industrial Hygiene Association meetings will begin on May 10 and continue through the morning of May 11. The American Association of Industrial Physicians and Surgeons will start its sessions on May 11 with clinics and meet in the afternoon with the American Industrial Hygiene Association. The American Association of Industrial Nurses will hold sessions on May 12, 13 and 14. A banquet will be held on May 11 for all members of the four cooperating associations. The Industrial Hygiene Division of the U. S. Public Health Service will conduct a seminar for engineers and chemists engaged in industrial hygiene work in federal and state agencies May 4-8 in St. Louis preceding the conference. Additional information may be obtained from Senior Sanitary Engineer J. J. Bloomfield, chief, field operations section, Industrial Hygiene Division, U. S. Public Health Service.

International Medical Congress.—On February 17 and 18 at a meeting in Laredo, Texas, the International Medical Congress was organized with Dr. Ismael Cosío Villegas, Mexico, D. F., president; Dr. Isidore S. Kahn, San Antonio, Texas, vice president; Dr. Norman Shafer, San Antonio, secretary, and Miss Pansy Nichols, Austin, executive secretary. The organization was the result of a meeting called to hold an international congress under the auspices of the Southwest Texas District Medical Society, the Texas Tuberculosis Association, the National Tuberculosis Association and the U. S. Public Health Service and the Pan American Sanitary Bureau. Local hosts were the Webb-Zapata-Jim Hogg Counties Medical Society and the Webb County Tuberculosis Association. The meeting was intended to bring together United States and Mexican physicians for discussions of medical subjects of interest to the medical profession in the border states of both countries. Among the speakers were:

Dr. Julius L. Wilson, New Orleans, What Modern Medical and Surgical Treatment Offer the Tuberculous Patient.

Dr. John G. Young, Dallas, Recent Advances in Infant Nutrition.

Dr. Alvis E. Greer, Houston, The Campaign Against Socialization of Medicine.

Dr. Percy S. Pelouze, Philadelphia, Modern Treatment of Gonorrhea.

Herman E. Hilleboe, P. A. Surg., U. S. Public Health Service, Community Control of Tuberculosis.

Dr. Miguel Jimenez, Mexico City, Collapse Therapy in the Control of Tuberculosis.

Eighty-two physicians registered at the meeting, fifty-nine of the United States and twenty-three of Mexico. It was agreed to hold a similar congress annually in Laredo.

Refrigeration Research Foundation.—An initial fund of \$250,000 will be used to start the work of the Refrigeration Research Foundation, a non-profit making corporation organized under Illinois laws Oct. 14, 1943. Membership in the new foundation is composed of two groups—public members who have achieved civic distinction and sustaining members, representatives of companies who have contributed funds to the foundation. Funds will be provided by subscriptions from corporations, firms or individuals engaged in the preservation of food or other commodities by refrigeration. Research will be carried on in Canada and Mexico as well as in the United States. The objectives of the new group are:

To improve the methods of refrigeration for the better preservation of food and other commodities essential to the health and welfare of the American people.

To develop and support research in the science and art of refrigeration of food and other commodities through a nation-wide program of financial grants to established institutions and agencies of research.

To establish fellowships in institutions and agencies of research and thereby to aid in the training of competent personnel to give activation and leadership to the refrigeration of commodities essential to the national economy.

To establish in the interest of the American people a repository of scientific information relating to the refrigeration of food and other materials.

To cooperate with and aid agencies of federal and state governments, institutions of research and others in connection with their scientific and educational work involving the refrigeration of food and other products.

Officers include Roy M. Hagen, Los Angeles, president, and Helmut C. Diehl, B.S., principal chemist and chief of the commodity processing division of the Western Regional Research Laboratory of the U. S. Department of Agriculture, director of the scientific program.

LATIN AMERICA

Health Activities in Latin America.—The Cuban Ministry of Agriculture is assisting Dr. B. Vaillant Duany in his studies after his recent discovery of a bacterial mold while investigating the penicillium fungus. The name *Broomeya cubensi* has been given to the new mold, which is said to be characterized by a kidney shaped form of 20 to 30 cm. in circumference and having a sponglike texture. In the report released to the ministry, it is stated that from the industrial point of view this fungus might well replace marine sponges, since its absorbent powers are absolute. Its texture is not

disintegrated by alcohol and it embodies all other properties of sponges. The report continues that in surgery the material could be substituted for the cotton and gauze sponges and that it may be used in the treatment of certain ulcerous diseases, serving as a pressure absorber for bandages. The cultivation of the fungus is best obtained in shaded beds of silica and other soil with a 70 per cent organic content, it was stated.

Blood Banks.—The Cuban Medical Federation has established a blood plasma bank in Havana, the first in a series to be formed throughout the country. The work is being carried out with the assistance of Dr. Cornelius P. Rhoads of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, who recently made a trip to Cuba's medical centers under the auspices of the National Research Council.

Mother's Milk Bank.—The Infant Hygiene Department of Havana has created a mother's milk bank.

Care of Rubber Workers.—Five dispensaries have been opened in northwestern Ecuador for rubber workers, bringing to a total of seventeen the number now operating in this rubber area through the cooperation of the Ecuadorean government and the Institute of Inter-American Affairs, Washington. Each dispensary is staffed by a physician trained in tropical disease control and usually a laboratory technician. The new dispensaries are at Tena, province of Napo and Pastaza; Concepcion, province of Esmeraldas, and in Cojimes, Coaqui and Jama in the province of Manabi.

New Medical Journal.—*Revista Brasileira de Medicina*, a new monthly publication, made its appearance with the January issue. The first number contains sections of original articles, medical lectures, clinical notes, critical commentaries, current medical literature, medical news and books received. Dr. Olavo Rocha is the editor. The headquarters of the new journal are Editora Guanabara, rua do Ouvidor 132, Rio de Janeiro.

FOREIGN

Personal.—Dr. Andrew Rae Gilchrist was appointed George Alexander Gibson Lecturer for 1944 for the Royal College of Physicians of Edinburgh and Dr. Norman M. Dott was appointed Morison Lecturer. Both are members of the college. —Dr. William H. Newton, since the outbreak of war acting head of the department of physiology at University College, London, has been appointed George Holt professor of physiology in the University of Liverpool, succeeding Dr. Herbert Eldon Roaf, who is retiring at the end of March. —Dr. George Grey Turner, professor of surgery in the University of London, has been elected to deliver the Hunterian oration for 1945 of the Royal College of Surgeons of England.

Medical Changes in Norway and Sweden.—From a personal letter comes the following information regarding medical conditions in Norway and Sweden. An eminent physician writes: "Here in Sweden the conditions are still quiet. We live very nearly as in the deepest peace with the exception that we are using all means to strengthen our defenses in the hope to keep us free from German attacks. Dr. Gunnar Holmgren, widely known as an authority on laryngeal cancer, has discontinued his service as professor and clinical chief of the otorhinolaryngologic department in the Karolinska Sjukhuset because of age. His successor is Dr. Torsten Skoog. Dr. Dohlman is professor in Lund, and Dr. Nylen is professor in Uppsala. Professor Blegvad has been ill but has made an excellent recovery. The clinic of De Kleyn in Holland is still endeavoring to conduct some scientific research in spite of the terrific circumstances that prevail. Professor Schmiegelow in Copenhagen has just celebrated his 87th birthday and is reported still able to work. In Norway scientific research in medicine seems to have been discontinued completely owing to prevailing circumstances."

Deaths in Other Countries

Dr. Alexander Primrose, professor of clinical surgery emeritus, University of Toronto Faculty of Medicine, died February 8, aged 82. Dr. Primrose, who was an honorary fellow of the American Medical Association, once served as dean of the University of Toronto. —Dr. Heitor Annes Dias, professor of clinical medicine in the Faculty of Medicine of Rio de Janeiro for many years, died recently.

CORRECTION

Tables of Approximate Equivalents of Doses, Apothecaries' and Metric Systems.—In THE JOURNAL, February 19, page 509, in the abbreviated conversion table, for "1 grain = 0.648 gram (Gm.)" substitute "1 grain = 0.0648 gram (Gm.)."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 5, 1944.

Sex Education

In recent years there has been a growing sense of the need for young people to be suitably introduced to and instructed in the matter of sex and of the responsibilities of schools and youth organizations in this work. This need is increased by the tendency of wartime circumstances to break down restraints. The Board of Education has therefore issued a pamphlet on sex education in schools and youth organizations. Up to the present time such instruction has not been generally undertaken by the board, which now invites the particular attention of local authorities to two practical possibilities: 1. The provision of short courses on sex education for teachers and youth leaders to open up the subject and make available the experience of colleagues who have pioneered successfully in this field and others who have had special knowledge and experience. 2. The organization of parents' meetings with a view to securing their cooperation in anything done through the schools and helping them to deal with their own children. These suggestions relate primarily to the long-term aspect of sex education. But in certain areas authorities are now much exercised by the immediate problem of the increased number of young persons who fall victims to the special temptations and circumstances of wartime.

It is pointed out that knowledge of the process of human reproduction comes to every one sooner or later but that the way in which this knowledge is acquired is all important. The first approaches to the subject are probably best made not through formal instruction but by dealing sensibly with any question asked. Whatever the age and whatever the question, the answer should be given to the fullest extent that the child can understand. A substantial proportion of parents are reluctant to do this or feel the need of some guidance. Hence the for instruction in school. During the war many young have become victims of indiscriminate associations, with increasing incidence of venereal disease. It is important that they should be warned of the danger, though it is undesirable that sex instruction should be concentrated on the pathologic aspect.

Instruction in the physiology of sex should be given objectively at an early age, before emotional associations develop and if possible as part of a normal course in, for example, biology or general science. When the child is more mature the teacher will draw on his or her own experience of life, or the religious and moral sources on which he or she has relied. How the sex impulse can make or mar happiness should be shown then.

The age at which sex instruction is given varies considerably. The most common age is 13, the last year at school and the stage at which mammals and man are most often discussed in the biology course. But it is increasingly realized that there are great advantages in introducing the subject at an early age, before strong emotional associations develop. Physicians have an obvious advantage for sex instruction, as they can speak with authority. The following testimony from a girls' organization is noteworthy: "A really good woman physician, preferably married, youngish, with a modern approach and modern clothes, is the most successful. The girls trust the physician as a physician and welcome her counsel as a married woman; she looks like the sort of woman they would like to be." Appre-

ciation from parents regarding this work has been expressed almost universally, and among its most valuable results is the possibility that these children, when they become parents, will find it easier to give this knowledge to their own children.

American Army Takes Over Military Hospital

An impressive ceremony took place recently when a famous military hospital was handed over to the medical services of the United States for the duration of the war. The locality of the hospital is not published. The hospital contains many memorials of past senior officers whose lives were spent in the medical services of the army all over the empire. When Lieut. Gen. Sir Alexander Hood, director general of the Army Medical Service, and Brig. Gen. Paul R. Hawley, chief surgeon of the U. S. forces, reached the parade ground they were received with a general salute from the troops of the two nations. After inspection of the guard of honor the party ascended the main entrance steps. Here the registrar of the hospital, who has fifty-one years of army service and is the oldest soldier serving in the army medical corps, handed the presentation key, which lay on a cushion bearing the badges of the medical services of both armies, to Sir Alexander Hood, who said "I hand over this key in the certain confidence that when in the hour of victory we receive back the hospital its traditions will have gained an added luster." The key was received by Brigadier General Hawley, who said that he accepted the charge of the hospital so generously placed at their disposal and assumed the obligation of maintaining its great traditions. He added "The final symbol of our association can be found in this hospital."

Trinidad Health Campaign: Improvements Achieved

The Colonial Office announces that \$2,500,000 is to be spent on Trinidad's health program this year, which is \$500,000 more than was spent last year. New specialists in the hospitals, higher salaries for nurses and a new health education officer to supervise the teaching of hygiene in the schools are among the improvements envisaged. Work on two new hospitals may be held up till after the war, but it is hoped that construction of the \$1,500,000 tuberculosis sanatorium may start this year. Two new health centers have been built and the first rural dispensary is in course of construction. A child welfare center established last year is proving successful. Campaigns against disease have made gradual but steady progress. Antimalarial measures have included the clearing of swamps, and one cleared on the sea-shore promises to become a popular health resort.

The incidence of typhoid and dysentery has declined. A vigorous campaign against hookworm is being carried out. Two mobile hookworm units are now supplementing the work of clinics in rural areas. The medical superintendent at the Trinidad Leprosarium has been responsible for many improvements; district clinics throughout the island now deal with many early cases of leprosy, rendering transfer to the leprosarium unnecessary.

Turkish Medical Visitors

The war seems to have brought to this country many medical visitors from almost all allied and neutral nations. The latest arrivals are three leaders of the Turkish medical profession whose visit is sponsored by the Turkish Ministry of Health. They are Dr. Huseyin Avni Askel, chief surgeon to the Haskei Hospital, Istanbul; Lieut. Col. Burhanettin Tugan, professor of clinical chemistry, Gulhane Military Medical School, and member of the Military Medical Academy, and Dr. Bekir Nimetullah Taskiran, chief surgeon of the Ankara Model Hospital. They are interested in research work on nutrition, wartime surgery, methods of blood transfusion and the treatment of wounds, burns and other injuries.

BRAZIL

(From Our Regular Correspondent)

Jan. 20, 1944.

Identity of the Equine Encephalomyelitis Virus
in Brazil and the United States

Up to a few months ago, little was known about the cause of equine encephalomyelitis in Brazil. For the other countries of South America Rosenbusch and Howitt proved that a virus isolated in Argentina was indistinguishable from the western strain of the United States, and Beck, Wyckoff, Kubes and Rios affirmed that a virus isolated in Venezuela was antigenically distinct from both the eastern and the western American strains. In Brazil Carneiro in 1937 isolated a virus which he supposed "very similar to that of the infectious encephalomyelitis of the United States" as far as clinical and pathologic data from inoculations in experimental animals could show. More recently, with a formaldehyde treated vaccine prepared from the same virus, Carneiro was able to protect guinea pigs inoculated intracerebrally with an homologous virus. Nevertheless, as he could not show the existence of cross immunity between the virus isolated by him and that from Argentina, the Brazilian virus continued unidentified. Owing to uncertainty in the identification of the several infectious agents isolated from cases of equine encephalomyelitis in Brazil, it is interesting to record the fact that Drs. Edwin H. Lennette and John P. Fox of the Service of Studies and Researches on Yellow Fever, maintained in cooperation by the International Health Board of the Rockefeller Foundation and the Brazilian Ministry of Health, have been able in the Rio de Janeiro laboratory to find horses and mules with antibodies neutralizing the eastern strain of the equine encephalomyelitis virus of the United States.

Not long ago an epizootic of encephalomyelitis occurred in the county of Pessanha, located in the east central part of the state of Minas Geraes. Samples of serum were collected from 18 horses and mules which had passed through the epizootic. These serums were first tested for neutralizing antibodies to the St. Louis encephalitis, a sample furnished by Dr. M. G. Smith of Washington University, St. Louis, being used, and then for neutralizing the eastern and western strains of the equine encephalomyelitis virus, through the use of samples furnished by Dr. P. K. Olitsky of the Rockefeller Institute, New York. None of the serums contained demonstrable antibodies to the St. Louis or the western equine encephalomyelitis viruses. Fourteen of the 18 serums, however, possessed antibodies to the eastern strain. Only one of the 20 control serums obtained from adjacent areas was found to contain antibodies to the eastern strain of the virus, and this one also came from the county of Pessanha. The conclusion of this study is that the eastern strain of the equine encephalomyelitis virus occurs also in Brazil and is not confined to North America.

A New Ponderal Test for Detection of the
Activity of Adrenal Cortex Extract

Unilateral adrenalectomy causes apparent hypertrophy of the remaining gland, as shown by the MacKays. In normal animals adrenal extract induces atrophy of the adrenal glands, a phenomenon demonstrated by Ingle and Kendall. The growth stimulus seems to be dependent on the adrenotropic hormone of the hypophysis. The MacKays demonstrated that active cortical extracts are able to prevent the pituitary stimulus in adrenalectomized rats. Based on these findings, Dr. Gilberto G. Villela of the Oswaldo Cruz Institute of Rio de Janeiro devised a new biologic test: The weight of the remaining adrenal glands of the rats is taken as a criterion for the activity of the cortical extracts injected. Rats weighing from 20 to 60 Gm. were employed. Adrenalectomy was performed unilaterally, and

the extract was injected from the same day until the eighth day after operation. At this time the second gland was removed, dried and weighed. For each test three groups of rats were used, the first group having been injected with the unknown extract, the second with 0.5 mg. of 11-desoxycorticosterone, and the third not injected. The weight of the adrenals of the rats of the third group showed definite hypertrophy compared with the other groups. The weight and size of the glands of normal rats of the same age showed values comparable to those of the rats which were operated on and injected with active extracts or 11-desoxycorticosterone. When younger rats weighing from 20 to 30 Gm. were used the differences were not as evident as when older animals, weighing from 50 to 60 Gm., were employed. The quantity of the hormone necessary to maintain the weight of the gland of the adrenalectomized rat at the same level as the weight of the gland of the rat which is not operated on is proposed as "1 antihypertrophic rat unit."

Brief Items

Dr. Alfredo da Matta of Manaus, state of Amazonas, has just completed fifty years in the practice of medicine. As a physician and as a citizen Dr. da Matta has an exceptional record, and for this reason the Medical Society of Manaus, the government and his many friends have held several demonstrations in his honor.

The Brazilian Academy of Medicine of Rio de Janeiro rewarded the monograph of Drs. Cicero Monteiro and Candido de Oliveira on "Tumors of the Neck" with the prize "Hilario de Gouveia." Dr. Aloysio de Castro, professor emeritus of medicine of the University of Rio de Janeiro and president of the academy, presented a special medal to the authors.

In a farm near Agua Claras, state of Bahia, a "preventorium" for 100 healthy children of leprosy parents has been recently inaugurated. This is the sixteenth such establishment founded by the federal government in the last few years. There are about 30,000 persons with leprosy in Brazil, many of them isolated in fifteen leprosariums built since 1935, when the federal government began to put into practice a large plan to control the disease.

Marriages

JOHN GARNETT RAMSBOTTOM, Jamaica, N. Y., to Miss Harriet Louise Strayhorn of Durham, N. C., in Cheraw, S. C., December 30.

ROBERT HOWELL WITMER, Lancaster, Pa., to Miss Audrey Elizabeth Bickley of Bala-Cynwyd, December 27.

PAUL ALOYSIUS KEENEY, Harrisburg, Pa., to Miss Ann Fitz Gerald of Flushing, N. Y., December 17.

WILLIAM WALTER LEMAN, Philadelphia, to Miss Ruth Cordelia Staley of Haverford, Pa., December 18.

LYNDON CLAY SUTHERLAND, Springfield, Ohio, to Miss Ruth Anne Vogel of Waukegan, Ill., February 5.

JULIAN EDMOND JR., Modesto, Calif., to Miss Elizabeth Bonine of Lodi at Stockton in January.

ROBERT EDWIN SHIFLET, Augusta, Ga., to Miss Helen Marie Crisp in Seneca, S. C., December 29.

ORHO B. ROSS JR., Charlotte, N. C., to Miss Dorothy Maude Lowe of Miami, Fla., December 22.

EDWARD D. CROISSANT, Belmont, Mass., to Miss Frances Sisk of Houston, Texas, January 28.

WARREN H. ORR, Seattle, to Miss Opal MacCulloch of Providence, R. I., January 1.

EDGAR ANGEL to Miss Maybelle Bryant, both of Franklin, N. C., January 18.

DAVID GALLOWAY to Miss Alice Neil, both of Memphis, Tenn., January 5.

S. MARK WHITE to Mrs. Jewell Fuller, both of Minneapolis, January 22.

Deaths

Charles Walts Burr ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; professor of mental diseases at his alma mater from 1901 to 1931 and since the latter date professor emeritus; emeritus professor of neurology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; president of the American Neurological Association in 1908 and the Philadelphia Psychiatric Society in 1909 and 1910; past president of the Philadelphia Neurological Society and the Pathological Society of Philadelphia; member of the American Psychiatric Association; fellow of the American College of Physicians; neurologist from 1896 to 1931 and psychiatrist at the Philadelphia General Hospital from 1931 to 1940; for many years on the staff of the Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases; delivered the S. Weir Mitchell Oration before the College of Physicians of Philadelphia Nov. 19, 1919; honorary librarian, College of Physicians of Philadelphia; in 1935 received the twelfth annual Strittmatter Award of the Philadelphia County Medical Society; died February 19, aged 82, of carcinoma of the pancreas.

Myron Firth Metzenbaum ☉ Cleveland; University of Wooster Medical Department, Cleveland, 1900; specialist certified by the American Board of Otolaryngology; a member of the founders group of the American Board of Plastic Surgery; member of the American Academy of Ophthalmology and Otolaryngology, Cleveland Otolaryngological Club, Academy of Medicine of Cleveland and the European Congress of Reconstructive Surgery; fellow of the American College of Surgeons; awarded medal by the United States government for research in radium, St. Louis Exposition in 1904; established Cleveland's present ambulance system under police department in 1909, which was adopted throughout the country; developed and introduced the method of administering ether-air or drop ether anesthesia in 1900; described a new method of replacement of the lower end of the dislocated septal cartilage in 1929; at one time lecturer at the Western Reserve University School of Medicine; served on the staffs of the Huron Road Hospital, East Cleveland, Mount Sinai and St. Luke's hospitals; died January 25, aged 67, of angina pectoris.

James Lung Bevans ☉ Colonel, U. S. Army, retired, Vashington, D. C.; Northwestern University Medical School, Chicago, 1893; fellow of the American College of Surgeons; entered the medical corps of the U. S. Army as an assistant surgeon on Dec. 6, 1901; rose through the various grades to that of lieutenant colonel on May 15, 1917; retired Aug. 21, 1922 for disability in line of duty; promoted to colonel on June 21, 1930 under a special act; veteran of the Spanish-American War; chief surgeon of the Third Army Corps in France during World War I and later assistant commandant of the medical department, Field Service School, Carlisle, Pa.; held the Distinguished Service Medal and the Croix de Guerre with Palm; in 1920 received the Henry S. Wellcome Medal for the best essay on medicomilitary subject; served as the first director and medical superintendent of the John D. Archbold Memorial Hospital, Thomasville, Ga.; died in the Walter Reed General Hospital February 5, aged 74, of congestive heart disease.

Hugh Alvin Cowing ☉ Muncie, Ind.; Miami Medical College, Cincinnati, 1890; past president and vice president of the Indiana State Board of Health; for many years secretary of the Delaware County Board of Health; president of the city board of health; served as city and county health officer; past president and secretary of the Delaware County Medical Society; one of the organizers, served as director, vice president and president of the Y. M. C. A.; a member of the Indiana State Committee of the International Congress on Tuberculosis in 1908; for many years president of the Delaware County Children's Home Association; formerly vice president of the Muncie Federal Savings and Loan Association; member of the Selective Service Board, 1917-1918, and the Volunteer Medical Service Corps in 1918; author of "A Meandering Hoosier" in 1937; member of the staff and vice president of staff 1932-1933, Ball Memorial Hospital, where he died February 9, aged 83, of carcinoma of the prostate with metastasis.

George Washington Post ☉ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; president of the Illinois State Medical Society; president of the Chicago Medical Society, 1937-1938; fellow of the American College of Surgeons; formerly assistant in surgery at his alma mater, now known as the University of Illinois College of Medicine, instructor in clinical surgery, associate in surgery, assistant professor of

surgery, and since Sept. 1, 1930 associate professor of surgery; member of the founders group of the American Board of Surgery; formerly consulting surgeon, Chicago State Hospital; attending surgeon, West Suburban Hospital, Oak Park, Ill.; at one time attending surgeon, St. Anne's Hospital; died, March 2, aged 59, of coronary occlusion.

Caleb Anderson Ritter ☉ Kansas City, Mo.; Indiana Medical College, Indianapolis, 1877; an Affiliate Fellow of the American Medical Association; member of the Central Association of Obstetricians and Gynecologists; past president of the Kansas City Academy of Medicine; fellow of the American College of Surgeons; formerly a trustee, treasurer and professor of obstetrics at the University Medical College; at one time city physician and police surgeon in Indianapolis; served on the staffs of the Florence Crittenton and St. Vincent's maternity homes, the University Hospital, Kansas City General Hospital, Research Hospital, Christian Hospital, Willows Maternity Sanitarium and the Trinity Lutheran Hospital, where he died January 31, aged 92, of bronchopneumonia.

Harry S. Berman ☉ Detroit; College of Physicians and Surgeons, Baltimore, 1914; specialist certified by the American Board of Pediatrics, Inc.; a captain in the medical corps of the U. S. Army during World War I, served on former President Hoover's food commission and aided in the rehabilitation of Czechoslovakia; secretary-treasurer of the Wayne County Medical Milk Committee; member of the Association of Military Surgeons of the United States and American Public Health Association; member of the child welfare division of the American Relief Administration; on the staff of St. Mary's Hospital; member of the selective service examining board and on the staff of Harper Hospital, where he died February 16, aged 54.

Philip Davie Kerrison, New York; Medical College of the State of South Carolina, Charleston, 1896; New York University Medical College, 1898; specialist certified by the American Board of Otolaryngology; member of the American Laryngological, Rhinological and Otological Society and the American Otological Society, Inc.; fellow of the American College of Surgeons; formerly clinical lecturer on diseases of the ear at the University of Bellevue Hospital Medical College; served as professor of otology at the New York Polyclinic Medical School; for many years on the staffs of the Willard Parker and Manhattan Eye, Ear and Throat hospitals; author of "Diseases of the Ear"; died January 24, aged 82, of heart disease.

William Wallace Roblee ☉ Riverside, Calif.; Cooper Medical College, San Francisco, 1895; past president of the California Medical Association and the Riverside County Medical Society; member of the House of Delegates of the American Medical Association in 1937; veteran of the Spanish-American War and World War I; served as physical director and director of the local Y. M. C. A. and president of the association for many years; formerly associated with the Indian Service; on the staffs of the Sherman Institute Hospital and the Riverside Community Hospital, where he died January 24, aged 71.

Major Henry Worthington ☉ Chicago; Northwestern University Medical School, Chicago, 1901; since 1930 medical superintendent of the Research and Educational Hospitals, University of Illinois; served as assistant eye surgeon at the Illinois Charitable Eye and Ear Infirmary, assistant in ear, nose and throat department, Chicago Eye, Ear, Nose and Throat Hospital and Rush Medical College Dispensary, and assistant in eye department, Children's Memorial Hospital; at one time secretary of the Chicago Ophthalmological Society; died February 27, aged 64, of coronary thrombosis.

Edwin F. Arnold, Bellefontaine, Miss.; Memphis (Tenn.) Hospital Medical College, 1891; member of the Mississippi State Medical Association; for many years chairman of the Webster County Democratic Executive Committee; trustee of the Eupora special consolidated school district and director of the Bank of Eupora; died January 7, aged 73, of cerebral hemorrhage.

Paul Bradford Badger Jr., Greenwich, Conn.; Columbia University College of Physicians and Surgeons, New York, 1943; died December 12, aged 26, of an overdose of sedative, self administered.

Cheney Hosmer Calkins, Springfield, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1882; member of the New England Ophthalmological Society; died January 19, aged 83, of cerebral thrombosis due to generalized arteriosclerosis.

Jay Randolph Crawley ☉ Anjean, W. Va.; Ohio State University College of Medicine, Columbus, 1917; served during World War I; died in a hospital at Charleston February 2, aged 52, of heart disease.

William Moody Cunningham * Jasper, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; member of the House of Delegates of the American Medical Association, 1926-1927; past president of the Medical Association of the State of Alabama, the Walker County Medical Society and the Southern Railway Surgeons Association; a founder of the Corona Hospital, Corona; served on the staffs of the Peoples and Walker County hospitals; died in Birmingham January 18, aged 85, of heart disease.

John O. Dyrnes * Manasoa, Benenitra, Madagascar, Africa; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1897; Associate Fellow of the American Medical Association; a medical missionary under the auspices of the American Lutheran Free Church Mission; died December 7, aged 76, of diabetes mellitus.

Orville Reed Hagen, Paterson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the Medical Society of New Jersey; a director and past president of the Passaic County Tuberculosis and Health League; served as a major in the medical corps of the U. S. Army and with the American Expeditionary Forces in France during World War I; formerly city health officer; on the staffs of the Valley View Sanatorium and the Paterson General Hospital; died January 23, aged 64, of coronary occlusion.

Virgil Hammer, Luray, Va.; Medical College of Virginia, Richmond, 1901; served as coroner and health officer of Page County for many years; died January 18, aged 66, of organic heart disease and coronary thrombosis.

Joel Walter Hood, Ocala, Fla.; Hospital College of Medicine, Louisville, Ky., 1884; honorary member of the Florida Medical Association; served for a short time during World War I; died recently, aged 92.

Theodore James Kasinski, Lorain, Ohio; Ohio State University College of Medicine, Columbus, 1916; served during World War I; died in the Veterans Administration Facility, Chillicothe, January 12, aged 54, of arteriosclerotic heart disease.

Elizabeth Kendig, Lancaster, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1886; died January 9, aged 89, of chronic myocarditis.

Hermann Loeb, Bridgton, Maine; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1906; died January 27, aged 62, of cerebral hemorrhage.

William Edward MacCoy, Glendale, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; died January 6, aged 68, of coronary disease.

Howard Peter Mickley, Neffs, Pa.; Jefferson Medical College of Philadelphia, 1889; died in the Allentown Hospital, Allentown, January 8, aged 77, of diabetes mellitus.

Harry Miller, Morristown, Ind.; Medical College of Indiana, Indianapolis, 1891; for many years served on the staffs of the National Home for Disabled Volunteer Soldiers at Marion, and Danville, Ill.; died January 2, aged 76, of cerebral hemorrhage.

William Francis Monaghan, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; formerly on the staff of the Misericordia Hospital, where he died January 10, aged 70, of lung abscess and myocarditis.

James Joseph Moran * Spring Valley, Ill.; Northwestern University Medical School, Chicago, 1905; past president of the Bureau County Medical Society; past president of the Hall township high school board; senior surgeon, St. Margaret's Hospital, where he died January 20, aged 67, of splenic anemia (familial type).

James Munsie, Cleveland Heights, Ohio; Niagara University Medical Department, Buffalo, 1898; served on the staff of the Hospital Clinic, now the Polyclinic Hospital, in Cleveland; died in the Woman's Hospital, Cleveland, January 18, aged 76, of leukemia and pneumonia.

Jay Odell Nelson, Howard City, Mich.; College of Physicians and Surgeons, New York, 1890; served as president of the school board and health officer; died January 13, aged 80, of pneumonia.

John Nugent, Southampton, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; served as coroner of Suffolk County and for many years health officer of Southampton; a founder of the First National Bank of Southampton and for many years president; on the staff of the Southampton Hospital; died January 18, aged 85, of cerebral hemorrhage.

Louis Ely Papurt * Cleveland; Western Reserve University School of Medicine, Cleveland, 1924; specialist certified by the American Board of Orthopaedic Surgery, Inc.; mem-

ber of the Clinical Orthopaedic Society and the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served on the staffs of the Lutheran Hospital, St. John's Hospital, Fairview Hospital, Deaconess Hospital, St. Luke's Hospital and the Mount Sinai Hospital, where he died February 17, aged 43, of rheumatic heart disease.

Mary Almera Parsons, Washington, D. C.; Howard University College of Medicine, Washington, 1874; member of the Medical Society of the District of Columbia; died in St. Elizabeth Hospital January 12, aged 93, of coronary occlusion and arteriosclerosis.

John Green Pittman, Gaffney, S. C.; Columbia University College of Physicians and Surgeons, New York, 1900; member of the South Carolina Medical Association; formerly secretary of the Cherokee County Medical Society; served as president of the board of health; on the staff of the Cherokee County Hospital, where he died January 7, aged 68, of coronary thrombosis.

Elgen Clayton Pratt * Lieutenant Colonel, U. S. Army, retired, Plymouth, Wis.; Milwaukee Medical College, 1908; U. S. Army Medical School, 1923; entered the medical corps of the U. S. Army on July 1, 1920; promoted as a major on Sept. 4, 1930 and later as a lieutenant colonel; retired Sept. 30, 1938; served during World War I; died December 29, aged 59, of coronary embolus.

Thomas Edward Presley, Clovis, N. M.; Memphis (Tenn.) Hospital Medical College, 1896; at one time vice president of the New Mexico Medical Society; served during World War I; on the staff of the Clovis Memorial Hospital; died in St. Mary's Hospital, Roswell, January 6, aged 73, of carcinoma.

Raymond Brock Ramage, Jacksonville, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1914; member of the Florida Medical Association; died December 22, aged 53, of coronary thrombosis and arteriosclerosis.

Irving Whitmore Robbins, Vacaville, Calif.; Cooper Medical College, San Francisco, 1908; at one time served in the U. S. Navy; died December 19, aged 60, of myocarditis.

Carl Francis Schaub * Chicago; Loyola University School of Medicine, Chicago, 1929; associate professor and chairman of the department of ophthalmology at his alma mater; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; senior ophthalmologist, on the staff of Mercy Hospital; died in the Columbus Hospital January 7, aged 41, of coronary disease.

Edwin B. Tuteur * Los Angeles; Jefferson Medical College of Philadelphia, 1890; died December 26, aged 74, of osteomyelitis of the jaw and the shoulder.

DIED WHILE IN MILITARY SERVICE

John Neal Carnes, Gallipolis, Ohio; Ohio State University College of Medicine, Columbus, 1940; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on May 10, 1941; later promoted as a captain; flight surgeon; killed in the Central Pacific area in an airplane accident December 10, aged 29.

Clayton Calvin Egan Carson, Gassaway, W. Va.; Jefferson Medical College of Philadelphia, 1925; member of the West Virginia State Medical Association; served as vice president, secretary and treasurer of the Central West Virginia Medical Society; commissioned a captain in the medical corps, Army of the United States, on Nov. 11, 1942 and extended active duty began Nov. 25, 1942 at Fort Jackson, S. C.; recently assigned to the 274th Quartermaster Service Battalion; died at Camp Butner, N. C., in an automobile accident February 14, aged 43.

William Val Sanford * Ripley, Tenn.; Vanderbilt University School of Medicine, Nashville, 1918; formerly associate health officer of Rutherford County and a member of the central office staff of the state department of public health, where he had been director of the field technical service for many years; served during World War I; commissioned a major in the medical corps, Army of the United States on July 31, 1942; extended active duty began Aug. 15, 1942 at Station Hospital number 1, Fort Bragg, N. C.; died in the North African area December 5, aged 49, of coronary occlusion.

Correspondence

"GROWTH ACCELERATING PROTEIN"

To the Editor:—A communication published recently in these columns by J. L. Gabby (*THE JOURNAL*, Nov. 6, 1943, p. 655) raises certain points which lead to confusion in the interpretation of published data. The comments by Gabby are occasioned by the fact that an editorial in *THE JOURNAL*, May 22, 1943, page 232, in reviewing a preliminary paper by White and Sayers (*Proc. Soc. Exper. Biol. & Med.* **51**:270 [Nov.] 1942) on the rat growth accelerating effect of nitrogen furnished by pancreas protein also commented on results obtained by White and Sayers with "soy bean protein." From the published data the editorial writer drew correct conclusions regarding the nutritional inferiority of the soy bean protein studied but described this in terms of "soy bean dwarfism." This was a rather sweeping generalization, as White and Sayers fed not the whole soy bean meal but an isolated protein constituent of the soy bean.

Gabby's remarks create the erroneous impression that the statements in the editorial were also made in the published work by White and Sayers. On the contrary, we did not refer at all to our data with the soy bean protein, since the chief object of our investigation was to report the striking results obtained with pancreas protein nitrogen. Moreover, the preliminary results with the soy bean protein were obtained with only four animals, although since publication this number has been doubled, with confirmation of the published findings.

The protein used by White and Sayers was prepared in the classic manner often employed to prepare glycinin, one of the alkali soluble proteins of the soy bean. This protein has long been known to be nutritionally inadequate and is not, as Gabby claims, a "newcomer in the field of protein nutrition." The growth data are for the particular preparation described by White and Sayers and not for soy bean flour or for any of the other proteins of the soy bean. This does not preclude the possibility that the nutritional deficiencies in one of the proteins of the soy bean may be met by other proteins in soy flour.

Gabby also objects to the heat treatment to which the soy bean protein had been subjected. He states that he has evidence from the literature that heat in an electric oven has no appreciable effect on the nutritive quality of soy bean protein, and therefore the heat treatment used by White and Sayers did not tend to increase its nutritive value. This point by Gabby is irrelevant to his discussion, since it is clear that heat does not decrease the nutritive value. The data of Wilgers, Norris and Hensler (*Indust. & Engin. Chem.* **28**:586 [May] 1936), clearly showing the higher nutritive value of "toasted" as compared to unheated soy bean protein, are ignored by Gabby. These authors obtained their material from Hayward, who used similar soy bean products in work reported in a publication by Hayward, Steenbock and Bohstedt (*J. Nutrition* **11**:219 [March] 1936). Gabby prefers to refer to a single table in the thorough study by Hayward, Steenbock and Bohstedt. This table presents evidence that heat in an electric oven had no appreciable effect on the nutritive value of soy bean protein. It should be noted that heat is not claimed to decrease the nutritive value. Gabby does not mention other conclusions of Hayward, Steenbock and Bohstedt on pages 231, 232 and 233 of their article, which also bear on Gabby's claim that "the literature of science has many references to the high nutritive value of soy protein."

To quote from Hayward, Steenbock and Bohstedt: "Raw soy beans were found to contain protein of low nutritive value as determined by the grams of growth per gram of protein eaten . . . commercial soy bean oil meals which had been prepared at medium and high temperatures . . . contained proteins

which had about twice the nutritive value of the raw soy beans or low temperature meals. . . . The food intake of all rats which received either the raw or heated soy bean diets ad libitum was found to be similar for the first few days of the feeding period. This suggested that the poor growth resulting from the raw soy beans and low temperature meals was due to some deficiency in these constituents rather than to a lack of palatability. When casein was incorporated in the diet which contained raw soy beans, normal growth resulted. These results suggested that the deficiency in the soy bean existed in the protein fraction."

It may be added that other work on the nutritive value of soy bean protein and the nature of the difference between raw and heated soy bean protein has been thoroughly examined and reviewed by Hayward and Hafner (*Poultry Science* **20**:139 [March] 1941). These investigators have established the nutritional inferiority of raw soy beans and the increase in the nutritional value which is produced by heat treatment. Almquist, Mecchi, Kratzer and Grau (*J. Nutrition* **24**:385 [Oct.] 1942) have recently presented further evidence that raw soy bean protein, used as the sole source of protein for chick diets, has a growth limiting deficiency in methionine. Also recent analyses by Block and Bolling (*Arch. Biochem.* **3**:217 [Dec.] 1943) show that defatted soy bean meal contains less leucine, an essential amino acid, per gram of nitrogen than any one of thirteen animal and eight plant sources of protein which were examined, with the exception of gelatin.

Gabby presents growth data obtained in his laboratory claiming to show that an edible product, soy flour, is almost the same in nutritive value as the protein of spray dried skimmed milk powder. A comparison is reported between casein and soy flour, with the protein level of the diets given as 20 per cent. While the two groups of animals grew equally well, the growth rate of control animals on the casein diet is surprisingly poor. Moreover, it is possible that a supplementary protein effect to the soy flour was obtained from the yeast used by Gabby as a source of the vitamin B complex. The nutritive improvement of soy bean protein by other proteins is well known and has been pointed out in the work of Hayward, Steenbock and Bohstedt.

Soy flour may be nutritionally adequate, since it contains a mixture of proteins. It is also apparent that the nutritional value may be further enhanced by other sources of protein supplements. However, data on soy flour have no relationship to the data of White and Sayers, who fed a protein isolated from a soy bean product and not a naturally occurring mixture of proteins.

It is not our primary purpose in this communication to engage in a controversy regarding the nutritive value of soy bean products or soy bean proteins. This can be established by the published results of capable investigators. It is our desire to point out incorrect statements made by Gabby, leading to erroneous conclusions and unwarranted impressions regarding the validity of our experimental observations. The sole object of the publication by White and Sayers was to report the striking growth rate observed in rats on a diet containing pancreas nitrogen. No conclusions were drawn regarding the nutritional qualities of the soy bean protein used, and no statements were made concerning the dietary value of soy bean products. This discussion, in which it has been necessary to participate, is a result of inferences which Gabby has chosen to make and for which no basis can be found in our paper.

ABRAHAM WHITE, PH.D.,

MARION A. SAYERS, M.A.

Department of Physiological Chemistry,

Yale University,

New Haven, Conn.

MEDICAL REPORTS FOR CHILDREN SENT TO ARIZONA

To the Editor:—Will you please call attention to the fact that children sent to Tucson, Ariz., for their health should have medical reports sent with them. A large percentage of the children who are sent here by doctors in the Middle West and in the East come to us without any medical record or medical report from their family doctors.

Every year several hundred children come to Tucson for their health and attend school here from a few months to an entire school year. These children have, or have had, asthma, rheumatic fever, sinus infections or some respiratory disease of one kind or another. If the doctors who send these children to Tucson could send a medical report to the school it would help us immeasurably in planning their courses, guarding against possible injuries to their health and helping them toward complete recovery.

We often find boys and girls taking an active part in physical education programs when they should not be allowed to participate at all or should have restricted play, and some take on more school activities than they should carry.

It is sometimes two or three weeks before these children are examined, and even when a physical check-up has been made it is quite possible that some more or less serious disorder may have been missed.

ROBERT D. MORROW, Tucson, Ariz.

Superintendent of Schools.

POSSIBLE ENDOGENOUS-ALLERGIC MECHANISM OF HORMONAL ARTHRITIS

To the Editor:—I have read with the greatest interest the paper of Dr. Selye and others on the hormonal production of arthritis in *THE JOURNAL*, January 22, page 201. The very fact that they were able to produce a polyarthritis accompanied by Aschoff bodies in the heart, periarteritis nodosa and eosinophil granulomas by overdosage of desoxycorticosterone suggests the possibility of an allergic reaction.

Since these manifestations are called forth in response to repeated injections of a hormone, an endogenous-allergic mechanism may be operating. The concept of endogenous allergy is more fully described in my textbook on allergy.

Both the Aschoff bodies and periarteritis nodosa are considered today as expression of an allergic state (Rich, A. R.: *Bull. Johns Hopkins Hosp.* 71:123 [Sept.] 1942), as well as eosinophil granulomas.

The idea that arthritis may be an allergic reaction to hormones is not new, particularly in arthropathies that occur in the menopause. In addition, numerous reports testify that individuals have been proved to be sensitive to endocrine products, including adrenal cortex extract. Joël (C. A.: *Schweiz. med. Wchnschr.* 71:1011 [Aug. 30] 1941) was even able to produce antihormones to adrenal cortex extract to such a degree that fastness to this hormone resulted.

Klinge (*Der Rheumatismus*, Berlin, Springer, 1933) and Brunn (*Experimental Investigations in Serum Allergy with Reference to the Etiology of Rheumatic Joint Diseases*, London, Oxford, 1940) have shown that sufficiently sensitized rabbits will react not only to specific but also to nonspecific factors such as cold with allergic manifestations of the joints, as did the animals of Selye.

On the basis of these few considerations it has occurred to me that the pathologic lesions following overdosage with desoxy-

corticosterone may be the clinical expression of an allergy to the hormone of the adrenal cortex. While I am aware that the proof for this assumption is rather difficult to furnish, it might be ascertained by the following experimental tests:

1. The Schultz-Dale test on arthritic rat's uterus, desoxy-corticosterone being used as the antigen.

2. Determination of the antihormone titer in the blood of arthritic and of normal rats.

3. Determination of eosinophil leukocytes in the blood.

It might even be possible that the rat's skin is able to react to a cutaneous test with the cortical hormone.

It would be of the utmost importance not alone for theory but also for the treatment of arthritic persons if it would be possible to establish the allergic mechanism of hormonal arthritides.

ERICH URBACH, M.D., Philadelphia.

VISUAL TESTS FOR MALINGERING

To the Editor:—In a communication published in *THE JOURNAL* January 29 under the heading Visual Test for Malingering, Dr. J. A. C. Gabriels suggests that a man who claims inability to read Snellen type subtending 17½ minutes of arc from a distance of 20 feet (visual acuity 20/70) but who can read characters subtending 10 minutes of arc at 10 feet (visual acuity 10/20) must be malingering.

Any myope knows better than this. Many of us can read type subtending less than 5 minutes at a distance of 14 inches and can see letters subtending 5 minutes from a distance of 5 feet (visual acuity 5/5) yet cannot read type subtending 20 minutes from a distance of 20 feet (visual acuity less than 20/80).

Dr. Gabriels forgets that objects lying closer to the eye than the so-called far point may be brought to a sharp focus, but as one goes beyond the far point the image rapidly becomes blurred. One way of defining myopia is to say that the far point lies at a finite distance instead of at infinity as in the emmetropic eye. Hence tests of acuity made at a given distance are not comparable with tests at another distance, and the use of conversion formulas to transpose results obtained in one way to another notation is fallacious.

RODNEY R. BEARD, M.D., San Francisco.

M.D.—NOT DR.

To the Editor:—The physicians of this country, in connection with the preparation of many millions of forms required by various government activities, frequently neglect to have their degrees following their signatures and at times prefix their names with the word "Dr.," providing no other evidence that they are doctors of medicine.

This occasionally works a hardship on us bureaucrats because, in order to assure proper distribution of certain types of materials, supplies, equipment and services, we must determine that the applicant is a physician rather than a doctor of science, of divinity, philosophy, naturopathy, chiropractic, podiatry, chiropody or whatever.

It will be appreciated if *THE JOURNAL* at some time might contain an editorial relative to this situation and the need for a doctor of medicine to identify himself as such when his having that degree is a prime factor in determining his eligibility under certain policies.

D. H. McCATFF,
2147 O Street N.W.,
Washington 7, D. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, March 4, page 668.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part I-II*. Various centers, May 1-3. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II*. Chicago, June 12-16. Final date for filing application is March 12. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Written*. Various large cities, May 8. *Oral*. Chicago, June 9-10. Final date for filing application is April 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral*. Chicago, March 30-31. Final date for filing application is March 20. *Written*. Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY: *Oral. Part II*. Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, P. O. Box 1940, Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I*. Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral*. New York City, June 1-4. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written*. Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Oral*. New York, March 25-26, and San Francisco, May 6-7. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Treatment of Protruding Hemorrhoids by Injections of Phenol Solution.—The plaintiff had been "troubled" with hemorrhoids for about eighteen years and sought treatment in November 1940 from a corporation practicing medicine. She was attended by Dr. Harold Coe, who was an employee of the corporation and also was its secretary. Apparently a solution of phenol was injected about three or four times a week for four months into the mucous membrane under the hemorrhoids to retract the blood vessels in the tissues. In April 1941 the physician removed protruding hemorrhoids which had not been shrunk by the injections. Thereafter the patient called at the defendants' office at infrequent intervals for treatment until June 17, 1941, when she was discharged as cured. At that time no hemorrhoids were protruding and the patient "felt fairly good, though some soreness was still present." On Aug. 7, 1941 she experienced excruciating pains in the rectum and discovered a large swelling in that area and a protrusion therefrom of about a half or three quarters of an inch. She was taken to Coe's office, where, according to the patient, he gave her three injections "the same that [she] had before" and some tablets to take at home. The next day, Friday, her condition was much worse and she went to Coe's office and was given two more injections. Coe told her that she had an abscess and when it came to a head he would open it and "everything would be all right." He assured her that it "positively was not necessary" for her to go to a hospital. The next day, Saturday, her condition was worse. She was too ill to go to the physician's office and Gowans, another physician employee of the corporation, called on her, giving her an injection in the arm, which somewhat relieved her pain for the time being, and leaving her a small tube of salve with instructions as to its use. As he directed she sat in hot water three times that day for

periods of fifteen to twenty minutes at a time. However, she obtained no relief and the pain continued to become worse. About 5:30 or 6 o'clock that evening she lost consciousness. The next morning her condition was very bad. She was in a semiconscious condition and was screaming with pain. Gowans again called and gave her another hypodermic. He insisted that she be not taken to a hospital. After Gowans had left, the patient's husband called in Dr. Mastin, who found a gangrenous hemorrhoid about the size of a thumb extending from the rectum and had her removed immediately to a hospital. He could not operate then because of her condition. He gave her injections of glucose. The semicoma condition he attributed to absorption of the toxins from the condition around the rectum. The condition in which he found the patient, this physician testified in the subsequent suit instituted against the corporation and Coe, in his opinion, could not successfully be treated by the application of salve or by having the patient sit in hot water, and the course he pursued was the only proper course of treatment. Further, this physician testified that while the injection method of treating hemorrhoids is a recognized form of treating internal hemorrhoids it is not a recognized method—in fact, it is a dangerous one—for treating protruding hemorrhoids. The next morning, Monday, Mastin excised the gangrenous hemorrhoid. The gangrenous area extended upward from the base of the hemorrhoid for 3½ inches and extended posteriorly into the region of the vagina and buttocks. There was a similar, though not so large, area on the opposite side of the rectum. The patient was discharged from the hospital about two weeks later. Subsequently she sued the defendant corporation, the president of the corporation and Dr. Coe for malpractice, claiming that the infection and gangrene that developed in her from August 7 onward was due to the negligence of the defendants. At the conclusion of the evidence the defendants asked for instructions in the nature of a demurrer to the evidence and, from a refusal of the court so to instruct the jury and from a judgment in favor of the patient, the defendants appealed to the St. Louis court of appeals, Missouri.

The contention of the defendants was, in effect, that the evidence adduced before the trial court did not support a judgment in favor of the patient, and the jury should not have been permitted to pass on the questions of fact involved. In our opinion, said the appellate court, under the facts and circumstances stated above, the patient clearly made a case for the jury. From the evidence the jury could reasonably have found that on Aug. 7, 1941 the patient was suffering from a protruding hemorrhoid and that the defendants, in treating her for this condition, used the injection method, which, according to Dr. Mastin, was not a proper method for protruding hemorrhoids. The jury could also have reasonably found that because of the improper method of treatment gangrene did develop and that the patient sustained an injury and suffering that she would not have experienced had the defendants administered proper treatment.

The defendants next complained that the trial court erred in permitting the patient, over their objection, to offer evidence with respect to the treatment she had received at the defendants' office from November 1940 to June 17, 1941. There is no merit to this contention, said the appellate court. It was necessary for the patient to offer this evidence to secure a complete picture of the subject matter of the litigation. The evidence contained no suggestion that the treatment received during that period was improper, and the patient made no attempt to recover damages for anything that occurred during that time. In fact, the patient herself testified that the treatment she received up to Aug. 7, 1941 was "all right" and she further testified that so far as she knew she was cured on June 17, 1941. The court specifically charged the jury that the patient did not charge the defendants with any negligence prior to Aug. 7, 1941 and that the jury should not consider matters occurring before that date except so far as they may be explanatory of matters occurring on and after Aug. 7, 1941. In view of the claim made by the patient, the character of the evidence offered and the court's instruction, we do not see how any jury of sensible men could have been misled into allowing damages for anything that occurred previous to Aug. 7, 1941. Nor, continued the court, are we impressed with another contention of the defendants that the instruction just referred to was confusing and therefore

erroneous because it gave the jury "a roving commission to determine what matters occurring after Aug 7, 1941 are to be explained by evidence relating to treatments prior to June 17, 1941." It is the duty of the jury to sift and evaluate the evidence. The jury must be deemed to have intelligence enough to determine the logical bearing that any bit of evidence may have on the main issues of fact, without having the court specifically point it out to them. The instruction merely directed the jury to disregard any evidence with respect to the prior treatment that, to their minds, had no logical relevancy to the point at issue. Usually, this is a simple mental process, and one that the ordinary lay mind is quite capable of performing. In our opinion, the instruction was proper.

For the reasons stated, the judgment in favor of the patient was affirmed—*Shipper v Dr C M Coc, Inc, 174 S W (2d) 887 (Mo, 1943)*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, April 18 20 Dr D L Cannon, 519 Dexter Avenue, Montgomery, Secretary
American Association for Thoracic Surgery, Chicago, May 5 6 Dr Richard H Meade Jr, Kennedy General Hospital, Memphis, 15, Tenn, Secretary
Arizona State Medical Association, Phoenix, April 14 15 Dr Frank J Milloy, 112 N Central Ave., Phoenix, Secretary
Arkansas Medical Society, Little Rock, April 17 18 Dr W R Brooksher, 602 Garrison Avenue, Fort Smith, Secretary
Association of State and Territorial Health Officers, Washington, D C, March 20 23 Dr G C Ruhland, 300 Indiana Ave, NW, Washington, D C, Secretary
Conference of State and Provincial Health Authorities of North America, Washington, D C, March 22 Dr A J Chesley, State Office Building, St Paul, Minn., Secretary
Florida Medical Association, St Petersburg, April 13 14 Dr Shaler Richardson, 111 West Adams St., Jacksonville, Secretary
Iowa State Medical Society, Des Moines, April 21 22 Dr Robert L Parker, 3510 Sixth Avenue, Des Moines, Secretary
Louisiana State Medical Society, New Orleans, April 24 26 Dr P T Talbot, 1430 Tulane Ave, New Orleans, 13, Secretary
Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25 26 Dr W Houston Toulson, 1211 Cathedral St., Baltimore, Secretary
Minnesota State Medical Association, Rochester, April 13 15 Dr B B Souster, 493 Lowry Medical Arts Bldg, St Paul, Secretary
Missouri State Medical Association, Kansas City, April 23 25 Mr Raymond McIntyre, 634 N Grand Blvd., St Louis, Executive Secretary
Nebraska State Medical Association, Omaha, May 1 4 Dr R B Adams, 416 Federal Securities Bldg, Lincoln, Secretary
New Jersey, Medical Society of, Atlantic City, April 25 27 Dr Alfred Strahl, 55 Lincoln Park, Newark, Secretary
North Carolina, Medical Society of the State of, May 13 Dr R D McMillan, P O Box 232, Red Springs, Secretary
Northern Tri State Medical Association, Toledo, Ohio, April 11 Dr Oscar P Klotz, 127 W Hardin St., Findlay, Ohio, Secretary
Ohio State Medical Association, Columbus, May 2 4 Mr Charles S Nelson, 79 E State St., Columbus, Executive Secretary
Oklahoma State Medical Association, Tulsa, April 24 26 Dr L J Moorman, 1200 N Walker St., Oklahoma City, Secretary
Society of American Bacteriologists, New York, May 3 5 Dr W C Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary
Tennessee State Medical Association, Nashville, April 11 13 Dr H H Shoulders, 706 Church St., Nashville, Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Seventeenth Annual Meeting, Held in Chicago Nov 5 1943

The President, DR JOHN WALKER MOORE,
Louisville, Ky., in the Chair

The Effect of Choline in the Transport of Fat

DR CLIFFORD H PETERS, AARON B KENDRICK, PH D, DR ROBERT W KEETON and DR JEROME T PAUL, Chicago
Choline in the doses given protects the guinea pig against deposition of neutral fat in the liver. The total cholesterol and cholesterol esters are somewhat increased, but phospholipids remain normal. The plasma of animals on experimental diets (no choline) showed definite increases in total lipids, phospholipids and neutral fats. The increases in total cholesterol and cholesterol esters were slight. The plasma of animals on experimental diets plus choline showed similar definite increases in total lipids and neutral fats. The increase in total cholesterol and cholesterol esters was more significant. There was a decrease in phospholipids with an approach to normal values. In the group of animals receiving no A or D supplements, deposition of fat in the liver was less and the cholesterol values were not elevated. In their plasma the neutral fat and phospho-

lipids fractions were elevated, but the cholesterol values were unchanged. These animals gained less weight and had a smaller traffic in fat.

These experiments support the view of fat transport that is gradually crystallizing. The choline furnishes labile methyl groups for the synthesis of phospholipids from fatty acids. When this mechanism is inadequate, cholesterol and cholesterol esters tend to accumulate. In the blood the phospholipids transporting the fatty acids accumulate until extra supplies of choline are furnished and lead to an unloading of the fatty acids in the tissues. The role of cholesterol in the transport of fatty acids seems definite, but secondary to that of phospholipids.

DISCUSSION

DR CECIL STRIKER, Cincinnati: Has Dr Keeton made studies with lipocair?

DR KEETON: Lipocair studies were reported in the second paper, in which we noted that 20 mg of choline did not protect the animals. We found no protection from lipocair. The standardization of lipocair solution is difficult and we do not feel that these experiments were conclusive.

Endogenous Hypovitaminemia A and Hypervitaminemia A

DRS HANS POPPER and FREDERICK STEIGMANN, Chicago
To study the endogenous changes which apparently are not dependent on nutritional variations, the plasma vitamin A level was determined daily or at short intervals in patients throughout the entire course of the mentioned diseases and compared with liver function tests and the response of the plasma vitamin A level to the intake of high doses of vitamin A (tolerance curve). Furthermore, the attempt was made to correct the hypovitaminemia by oral administration of vitamin A. A permanent success was obtained only with unusually large doses.

Characteristic plasma vitamin curves were obtained. In chronic liver disease, as in cirrhosis, repeated alterations between hypervitaminotic and hypovitaminotic and even avitaminotic stages were observed.

The following factors are apparently responsible for the endogenous change of the plasma vitamin A level: 1 Variation in intestinal absorption, since the tolerance curve is usually low in the hypovitaminemic and high in the hypervitaminemic stage. 2 Shift of the vitamin A within the liver from normal sites to pathologic ones, from which it is not released during the hypovitaminemic stage and from which there is an increased release in the hypervitaminemic stage. 3 Variations of factors within the plasma, such as its ability to hold vitamin A, as evidenced from the hypervitaminemia in some renal conditions in which the liver depots are low.

Cardiospasm and the Normal Esophagus: A Roentgenologic Study of Muscular Action

DRS FREDERIC E TEMPLETON and PAUL M MOORE, Cleveland
In cardiospasm the muscular action of the esophagus differs from the normal. The action is not a true peristalsis, as believed by some authors, but resembles the localized or tertiary contractions often seen in older patients.

Twenty-nine patients with cardiospasm were examined in the prone or supine positions with the "spot" machine, which eliminated the effect of gravity on deglutition. Normal as well as abnormal persons having strictures of fibrous or neoplastic origin in the lower esophagus were also observed.

In the normal esophagus three types of muscular action were encountered. The primary wave, a part of deglutition began in the pharynx and traveled down the esophagus, forcing the bolus along. The secondary wave, which was not initiated by the act of swallowing, usually began in the region of the aortic arch and progressed along the lower half of the esophagus in a manner similar to the primary wave. The tertiary or localized contraction was not peristaltic in character. The lower half of the esophagus, when distended with barium, underwent simultaneous contraction, which varied in degree, was seldom associated with symptoms, was usually momentary, was more or less segmental and did not progress along the esophagus. These changes often appeared as the primary wave reached the arch of the aorta, did not occur with every act of deglutition and were frequently seen in patients past middle age. In 3 pathologic specimens examined, only total thickening of the muscle was encountered.

In cardiospasm the primary wave, instead of proceeding to the stomach, faded out at the suprasternal notch. In the lower esophagus were peculiar, purposeless, shallow, segmental contractions which constantly appeared and reappeared at different levels. Some progressed for a few centimeters up and down the esophagus, producing an undulating appearance, but they were not sufficiently deep to move the bolus along. They were often accompanied by generalized tonic contractions, which diffusely narrowed the esophageal lumen. This tonic contraction often forced the barium mixture into the stomach, as the cricopharyngeus guarding the upper end of the esophagus remained tightly closed. Amyl nitrite caused all muscular activity to cease, the esophageal lumen to enlarge and the margins to become smooth.

In patients with obstructing lesions produced by peptic ulcer, scars from inflammation and carcinoma, the primary wave was seen.

DISCUSSION

DR. WALTER L. PALMER, Chicago: If I understand Dr. Templeton correctly, he does not include the cases of nonsphincteric spasm with those of cardiospasm. There may be some relationship we do not understand between these conditions. I wonder if Dr. Templeton's failure to note primary peristaltic waves was because the esophagus was dilated. He did observe primary peristaltic waves in certain cases of dilatation secondary to stricture, but dilatation of this type is rarely as great as that in cardiospasm. These findings are of course in accord with the view that cardiospasm is a condition resulting from some type of disturbance in the ganglion cells of the cardia and lower esophagus.

DR. TEMPLETON: Further evidence for absence of the primary wave is an esophagus filled with barium, given with the patient prone or supine, several minutes after swallowing. In the absence of obstruction, the primary wave forces most of the barium bolus into the stomach. The esophageal lumen then appears as a narrow channel.

Postvaccinal (Yellow Fever) Hepatitis; Convalescent Stage

COL. JULIEN E. BENJAMIN, M. C., A. U. S., Fort Devens, Mass.: A study of 200 soldiers who had had jaundice due to postvaccinal hepatitis returned from overseas because of inability to carry on disclosed that some had a clinical syndrome characterized by pronounced tremor of the hands and feet and extremely cold, dripping extremities, and signs of other serious vasomotor disturbances. A number of them showed evidence of hepatocellular dysfunction six months to a year after their attack of hepatitis. It has been determined in conjunction with workers at the Fatigue Laboratory that the exhaustion is actual and subject to calibration.

Preliminary Clinical Observations on the Antianemia Vitamin B₁₂ (Yeast Concentrate)

DR. E. A. SHARP, DR. E. C. VONDER HEIDE and J. G. WOLTER, B.S., Detroit: In a preliminary attempt to assess the hemopoietic activity of vitamin B₁₂ in man, 10 patients were selected. All had been under observation for a year or more and were known to be refractory to the types of therapy applied during that period. For three weeks prior to this study 21 complete blood counts were made on the group. All counts were within the range of 3.0 to 3.5 million erythrocytes per cubic millimeter and 9 to 10 Gm. of hemoglobin per hundred cubic centimeters. In addition, capillary fragility, erythrocytic fragility, prothrombin, bleeding and coagulation times, carbon dioxide combining power, total plasma protein and the albumin: globulin ratio were determined. No alteration was prescribed in diet or in mode of life. All other treatment was discontinued.

The yeast concentrate was specially prepared and assayed for this study. Calculated on the basis of the bioassay in chicks, about 1,000 micrograms of vitamin B₁₂ daily was assumed to be an effective oral dose for an adult. Since tolerance had not been determined, 600 micrograms was given daily per patient during the first week's treatment and gradually increased until all were taking 1,500 micrograms daily.

Analysis of hemopoietic data at the end of four weeks' treatment showed an appreciable increase in the hematocrit but only

slight changes in other erythropoietic phenomena. A significant increase in the globulin fraction of the plasma protein was detected at the end of the second week and continued throughout the four weeks of observation. Determinations of urine excretion of the B₁₂ factor were made on 6 of the 10 patients, which showed that the lowest excretion values were coincident with the highest plasma globulin concentration.

DISCUSSION

DR. WALTER L. PALMER, Chicago: This paper implies that there is a group of anemias which are iron resistant, which are not pernicious anemia and which are not sprue or any of the well recognized vitamin deficiency diseases. Have carefully controlled studies been made on such patients over long periods of time as to the effect of large amounts of crude yeast in the absence of iron? Do we have conclusive proof that there is a small group of anemias which are benefited by vitamins and do not belong to the specific group such as pellagra and sprue?

DR. SHARP: We encounter nonresponsive anemias not infrequently and have tried practically everything that has been offered for antianemic therapy, including large amounts of yeast, all the vitamins, iron and various combinations of liver, stomach and hormones. The patients to whom we referred have all been through that regimen in treatment in the hope a therapeutic lead of value would be encountered.

The Constitution of Prothrombin and Its Clinical Significance

DR. ARMAND J. QUICK, Milwaukee: Experimental evidence indicates that prothrombin is composed of two components (designated A and B), which are combined through calcium. When blood is stored, a progressive fall in prothrombin occurs, and likewise when an animal is fed dicumarol a decrease in prothrombin is observed. On mixing the two types of plasma, a complete restoration of prothrombin results as determined by Quick's method. The loss of prothrombin in the two plasmas therefore cannot be identical. Apparently, one essential prothrombin factor is lost in storage and another by the action of dicumarol.

For convenience the factor that disappears in stored blood has been named component A. Significantly, undecalcified blood or plasma shows no loss of prothrombin on aging. This suggests that component A when combined in the prothrombin complex is stable. The component is not adsorbed by aluminum hydroxide.

Component B is the factor which becomes depleted after feeding dicumarol and probably also in vitamin K deficiency. It appears on the body of the prothrombin complex. It is adsorbed by aluminum hydroxide from decalcified plasma but not from unaltered blood or plasma. Presumably when component B is combined in the prothrombin molecule with A and calcium it is not adsorbable.

Calcium is an essential part of the prothrombin molecule. Less sodium citrate is required to make human blood incoagulable in the presence of excess thromboplastin than that of the dog or rabbit. This is in accord with my finding that the latter contains much less prothrombin than rabbit or dog bloods. By removing the calcium the prothrombin molecule is disrupted and components A and B are liberated, but on recalcification the prothrombin complex is promptly resynthesized.

On the basis of this new concept concerning the constitution of prothrombin, a more exact classification of the various types of hypoprothrombinemias is possible. Clinically or experimentally no cases of component A depletion have as yet been found. In chloroform hepatitis a reduction of both components occurs. As a result of the present finding the pitfall in the determination of prothrombin becomes more evident. Possible errors due to the effect of high dilution on the individual components may perhaps explain discrepancies between the one and two stage methods. The use of stored blood to treat the hypoprothrombinemia due to dicumarol in the light of the new information seems logical. Since banked plasma loses only component A but retains all of its B factor, it should be as effective as fresh blood in counteracting the prothrombinopenia of dicumarol, which is characterized by a depletion of B but no loss of A.

DISCUSSION

DR. E. A. SHARP, Detroit: My experience two years ago in studying vitamin K and substitutes supports in a measure Dr. Quick's observations. I was working with whole blood, using heparin as an anticoagulant continuously in transporting blood from various institutions. During the hot weather the blood occasionally remained in the containers for several hours before being stored in the refrigerator. Two years ago I was not able to detect any difference when I determined the prothrombin immediately after storage when heparinized. However, I did find difficulties when oxalate and other anticoagulants were used.

DR. OVID O. MEYER, Madison, Wis.: The hypoprothrombinemia of vitamin K deficiency is corrected with the administration of vitamin K, as is the hypoprothrombinemia or obstructive jaundice. Large doses of vitamin K, 10 mg. administered daily, does not correct the hypoprothrombinemia of dicumarol administration, but recent work indicates that extremely large doses of vitamin K or the administration of vitamin K₁ oxide do result in correction of the hypoprothrombinemia of dicumarol administration. These observations, in view of Dr. Quick's statements, require an explanation.

DR. CARL V. MOORE, St. Louis: In vitamin K deficiencies, what changes occur in the B component of prothrombin?

DR. QUICK: In regard to Dr. Moore's question, I have had occasion to examine the blood of patients with mild hypoprothrombinemia. Cases with severe depletion of prothrombin are hard to find because they are usually treated with vitamin K early. In the cases I have studied, there has been a diminution of the component B. With regard to chloroform poisoning there is indication that both component A and component B are somewhat decreased, probably B more than A. Component A apparently is not a part of the final thrombin molecule, because in aged serum component A is still present.

Hematologic Complications of Therapy with Radioactive Phosphorus

DR. L. A. HEMPELMANN JR., DR. E. H. REINHARD, O. S. BIERBAUM, B.S., DR. CARL V. MOORE and DR. SHERWOOD MOORE, St. Louis: Severe degrees of leukopenia and thrombocytopenia have been observed in approximately one third of 49 patients with various types of hematologic dyscrasias who were under treatment with radioactive phosphorus. Seventeen patients also showed a decrease in erythrocytes. In a few instances these changes may have been produced by the disease itself, but in most cases they were attributable directly to the therapy.

Among the 49 patients included in this series, diagnoses were distributed as follows: chronic myelogenous leukemia 15, chronic lymphatic leukemia 10, leukosarcoma 3, monocytic leukemia 2, Hodgkin's disease 4, reticulum cell sarcoma 2, polycythemia vera 7, multiple myeloma 4 and mycosis fungoides 2. Twenty of these patients have died and 29 are still living. Except in the cases of polycythemia vera, the radioactive phosphorus was administered according to the simple fractional method described by Low-Beer, Lawrence and Stone; an effort was made to bring the blood counts to normal and to maintain them at or near normal levels.

The most characteristic changes which developed in the blood of the patients under treatment with radioactive phosphorus was (1) a fall in the leukocyte count, (2) a fall in platelets and (3) a decrease in erythrocytes. All three changes did not necessarily occur in the same individual. Thrombocytopenia of severe degree occasionally developed in patients with leukemia one or two months after the white blood cell numbers had fallen to approximately the normal level and the differential count had improved remarkably. Platelet counts below 100,000 per cubic millimeter were seen in 15 patients, and in many they were low enough to be accompanied both by purpura and by hemorrhage from mucous membranes. One subject with polycythemia vera developed an angina-like ulceration in her mouth when her leukocytes decreased to 1,000 cells per cubic millimeter. In no instance did any of these complications per se cause death of the patient, but in at least 7 patients they did cause symptoms and excited considerable anxiety.

The value of radioactive phosphorus in the treatment at least of patients with chronic myelogenous leukemia, chronic lymphatic leukemia and polycythemia vera is not deprecated. In most instances the changes produced in the leukocytes of patients with leukemia and in the red blood cells of subjects with polycythemia vera were satisfactory. Three patients whose platelet counts were low before treatment was begun showed a significant increase, and the erythrocyte levels of 7 patients with leukemia rose a million or more cells. Emphasis, however, is given to the fact that severe degrees of leukopenia and thrombocytopenia may be produced by radioactive phosphorus therapy. Frequent blood studies should be made during treatment so that these complications may be recognized before they become severe or before the damage to bone marrow becomes irreversible.

DISCUSSION

DR. EMMET B. BAY, Chicago: What is the half-life of radioactive phosphorus?

DR. DOUGLAS DEEDS, Denver: Were untoward hematologic reactions noted after single injections of radioactive phosphorus at intervals of approximately one month? In the treatment of polycythemia did the hemoglobin and erythrocyte count ever fall below normal figures?

DR. REINHARD: The half-life of radioactive phosphorus is 14.3 days. In most of our cases of polycythemia vera the leukocyte count, which was usually elevated above normal, began to fall two to three weeks after treatment with radioactive phosphorus was started, whereas the erythrocyte level as a rule began to fall six to eight weeks after the first treatment. In most cases the platelet count showed no significant change at any time. Several of our patients with polycythemia vera were overtreated and developed some degree of anemia. They were overtreated in spite of the fact that, as a rule, we used smaller doses of radioactive phosphorus than have been advocated by most investigators who have used this material. We believe that smaller doses than have generally been employed in the past will suffice. For the last six months instead of giving polycythemic patients a single large dose we have given them small doses at weekly intervals until the red count begins to fall; treatment is then discontinued until the erythrocyte and hemoglobin levels become stabilized. A longer time is required to get the patients under control, but there is less danger of overshooting the mark and producing an anemia.

Effect of Splenic Irradiation on Increased Vascular Erythropermeability in Purpura

DRS. F. W. MADISON, T. L. SQUIRE and S. A. MORTON, Milwaukee: Sixteen cases of purpura, entirely unselected as for etiology or presence or absence of coexisting coagulation defects, were given splenic irradiation in doses of 50 to 200 roentgens with voltage of 140 peak kilovolts and filter 0.25 mm. of copper every second or third day for three to five doses. Vascular erythropermeability was checked by the positive pressure method. Bleeding time was determined by the use of a sharp spring lancet set to penetrate 3 mm. in the ear lobe. Platelets were counted by the citrate method. All the cases were kept under observation for a considerable period of time before and after irradiation and the vascular changes checked frequently.

Thirteen cases showed moderate to pronounced reversal of the vascular lesions while 3 cases showed minimal to no response. Platelet changes were variable and transient. Alterations in bleeding time were roughly parallel to the changes in vascular erythropermeability. All the cases which failed to show vascular response were cases in which the purpura was secondary to a blood dyscrasia of leukemic type and all have terminated fatally. All the cases which showed reversal of erythropermeability were of essentially benign and reversible type, many of them being of allergic origin, and none of them have terminated fatally.

The reversal of vascular erythropermeability in the cases in which it occurred was similar to that seen after splenectomy but except in those instances in which the fundamental etiologic factors were removed was of relatively short duration, rarely lasting more than two or three months.

These findings suggest that irradiation of the spleen may be a valuable temporary measure in stopping spontaneous vascular leakage in selected cases of purpura whether or not there is an associated thrombocytopenia or hypoprothrombinemia. If such

an association exists it is extremely important to eliminate such vascular leakage promptly. Failure of response of vascular changes to splenic irradiation strongly suggests that the purpura is secondary to progressive or malignant disease. Satisfactory response to irradiation may suggest that, if other therapy fails, splenectomy is likely to be beneficial.

DISCUSSION

DR. ARMAND J. QUICK, Milwaukee: Did these spleens that were irradiated and then removed show any characteristic pathologic changes?

DR. MADISON: We have had only 1 such instance and in that case the spleen was not removed in Milwaukee, so that we did not have an opportunity to study the pathologic state of the spleen.

Effect of Digitalis on the Clotting Mechanism

DR. N. C. GILBERT, R. A. TRUMP, B.S., and DR. GEZA DE TAKATS, Chicago: The clotting mechanism of dogs was studied daily for ten to fourteen days by determining their response to heparin. After checking the normal response, we digitalized the dog to the point of intoxication. The resistance of dogs to heparin became pronounced. When digitalis was stopped, the reaction to heparin became normal. Sodium tetrathionate protected the same dogs from this heparin resistance when they were digitalized again.

Embotic phenomena have occurred after maintenance doses of digitalis have been unnecessarily raised. Our animal experiments suggest that the tendency to thrombosis is increased by digitalis; in auricular fibrillation stasis in the auricle is already present. In 6 cases digitalization, embolic phenomena and changes in the clotting mechanism seemed to coincide.

DISCUSSION

DR. EDWARD MASSIE, St. Louis: The clotting time of 24 patients was determined during an initial control period, then during digitalis administration and subsequently after the drug was stopped. The Lee-White method was used for the clotting determinations. The coagulability of the blood was found to be accelerated during digitalization in each of the 24 cases, with an average decrease of 3.3 minutes for the entire group. Statistically the results were found to be significant. In 13 cases a study was made of the differences between the clotting times during and after digitalis administration. In the majority of the patients an increase in the clotting time resulted following cessation of the medication. Studies on clot retraction and prothrombin time revealed that digitalis had no significant effect on these determinations. The mechanism by which digitalis administration accelerates blood coagulation has not been elucidated, but it is our impression that the digitaloid drugs may have a thromboplastic effect on the clotting mechanism.

DR. OVID O. MEYER, Madison, Wis.: Dr. Mead Burke in our department of pathology found that thrombosis which was frequently overlooked prior to postmortem examination was of more common occurrence in the medical than in the surgical service. He found the incidence of thrombosis to be particularly high in patients with cardiac decompensation; the occurrence was most frequent during the first week after the patient was put to bed. This we have attempted to explain largely on the basis of stasis. The period of greatest incidence corresponds to the period when the reduction of coagulation time is more pronounced following the exhibition of digitalis. The coagulation times obtained by Dr. Massie, which averaged about 13 to 14 minutes, appear to have been done at room temperatures on venous blood because they are so long. If the coagulation time is done with a water bath at a temperature of 37.5 C. the normal coagulation time is shorter, the fluctuations are less and the accuracy is greater. An average variation of between 1 and 2 minutes would be thought to be insignificant, particularly when starting with a control level of 13 to 14 minutes. Hence one should perhaps be cautious in attributing significance to these figures.

DR. L. N. KATZ, Chicago: The trend toward accelerated clotting is clear, and the evidence is therefore convincing to me. The importance of this study is that the general belief that digitalis below toxic doses will cause no harm to the cardiac

patient may not be entirely true, since the evidence in this report suggests that the clotting mechanism is facilitated. Care must be used in administering digitalis in conditions in which evidence of thrombosis is present.

DR. M. J. SHAPIRO, Minneapolis: Embolic manifestations are certainly not uncommon in patients with coronary thrombosis or rheumatic heart disease who have never received digitalis.

DR. EMMET B. BAY, Chicago: Were the animals in good condition that were receiving 0.2 to 0.3 Gm. of digitalis per day over a period of time and was there any evidence of hemoconcentration?

DR. TAKATS: Some explanation is necessary as to why we used the heparin tolerance instead of a single coagulation time. As shown by Dr. Massie, the decrease in coagulation time, while statistically significant, is not so clearcut as the change in the tolerance curve. It is only for that reason that we resorted to this test, which is no more complicated because it was taken on capillary blood. Last year the question was raised whether it is permissible to draw conclusions from the capillary coagulation time. It does not seem necessary to use venous coagulation time. In a series of patients that have a 2½ to 3 minute coagulation time one can raise them to 6 minutes by the capillary method, and we have done that. We have not intended to show that digitalis was the only factor producing embolism. I have seen just as many patients who never received digitalis develop embolism. Stasis does not seem sufficient in itself to produce thrombosis. These patients have had fibrillation for years and years. There must be a second factor operating to produce thrombosis. That factor may be infection or it may be a change in the clotting mechanism, the change which we found digitalis produces. We have previously shown with the heparin tolerance tests that in the postoperative state the patient's clotting mechanism undergoes considerable change.

Correlation of Clinical Types with Renal Function in Arterial Hypertension: II. Effect of Spinal Anesthesia

DRS. IRVINE H. PAGE, R. D. TAYLOR, A. C. CORCORAN and LILLIAN MUELLER, Indianapolis: Spinal anesthesia to the nipple line was administered to 8 patients tentatively identified as "neurogenic" and 6 designated essential, and the renal effect was observed by determination of plasma diodast and inulin clearance and arterial pressure. The levels obtained during anesthesia were compared with observations made under resting conditions. No consistent change of arterial pressure or renal blood flow or resistance was noted in the essential hypertensives, a finding in agreement with the experiences of others in normotensive subjects. In the so-called neurogenic group, all showed an increase of renal resistance blood flow and all but 1 a decrease of arterial pressure; a renal resistance was consistently decreased. These findings point to a participation of neurogenic vasoconstriction in the arterial hypertension of certain patients and suggest a means of differentiating these from patients whose hypertension and vasoconstriction are humoral in origin. It is conceivable that such a procedure as this might provide an objective basis for the selection of patients for thoracolumbar sympathectomy.

DISCUSSION

DR. GEZA DE TAKATS, Chicago: It would be extremely fortunate to have a method of differentiating patients suffering from so-called neurogenic hypertension from those having essential hypertension. Has Dr. Taylor any data on patients with normal blood pressure to indicate whether they maintain their blood pressure during spinal anesthesia? Certain patients with normal blood pressure on whom I have operated under spinal anesthesia had a rapid fall in pressure, and again others maintained the blood pressure at a stable level. The question then is whether the authors are simply measuring the state of the vasomotor center and whether this may not be the only difference between essential and so-called neurogenic hypertension. In patients operated on under general anesthesia for hypertension we have noticed a group which we would like to call neurogenic because they are sensitive to carbon dioxide. As soon as there is an accumulation of carbon dioxide the pressure rises. This led to the use of 10 per cent carbon dioxide inhalations preoperatively

to select the patients for operation. This seems to be an effective and perhaps a little simpler method than to subject the patient to a high spinal anesthesia.

DR. GEORGE E. WAKERLIN, Chicago: Was there any difference in the length of the history of hypertension in the neurogenic as compared with the essential groups? I have in mind the possibility that the neurogenic type may represent an early phase of essential hypertension.

DR. A. C. CORCORAN, Indianapolis: The effects described in this presentation are those seen during the period of roughly twenty-five minutes' full anesthesia. As anesthesia recedes and blood pressure rises, renal vasoconstriction returns in those patients in whom it had been modified by the anesthesia. The cause of the renal vasodilatation in neurogenic hypertension remains speculative. In large measure it seems to lie in the normal tendency of the renal circulation to maintain itself during changes of arterial pressure. As pressure falls arterioles dilate, and as it rises they constrict; renal blood flow and glomerular filtration pressure thus tend to remain constant during wide variations of blood pressure, and the glomerular capillaries are protected from excessive pressures. We have recorded elsewhere (Corcoran, A. C., and Page, I. H.: *Am. J. Physiol.* 126:354 [June] 1939) instances of this sort. In this view the renal vasodilatation seen in the neurogenic group effects normal response to variations of blood pressure rather than specific deprivation of abnormal vasomotor influence. The major demonstration therefore may express the greater lability of the renal vasculature in so-called neurogenic hypertension.

DR. IRVINE H. PAGE, Indianapolis: The problem of whether a certain part of patients classified as essential hypertensives are of neurogenic origin is a nebulous one. Most of us have, I think, been impressed by the large factor of nervous hyperactivity in some of these patients. Indeed I have felt that essential hypertension might in some cases have its origin in some form of nervous disturbance. There appears to be a definite correlation between the occurrence of overstimulation by the nervous system and prognosis in hypertensives. A group of patients described as having the "hypertensive diencephalic syndrome" seem to have a better prognosis than the more usual hypertensive. The term "neurogenic" implies a great deal and hence deserves to be used only with great caution. It implies that the hypertension is of nervous origin and that we know how to make the diagnosis. Certainly convincing proof has not been brought that hypertension is due to an overactive nervous system. Nor have we had sufficient objective evidence to make the diagnosis. While we recognize that study of renal function done under spinal anesthesia is not a simple bedside procedure, it may ultimately make diagnosis more certain. We hope to stimulate the search for methods which will prove or disprove the concept of "neurogenic" hypertension.

DR. TAYLOR: In answer to the question of Dr. de Takats regarding the effects of spinal anesthesia on the arterial pressure in normal persons we can only state that Smith's cases demonstrated a mean fall of —17 per cent. In the few normals we have observed, all showed a fall in pressure when the anesthesia extended to the nipple line. I am certain that many "neurogenic" hypertensives do develop essential hypertension if the condition exists long enough. Some observers have seen patients with "neurogenic" hypertension who have elevated filtration fractions. We have seen this type of patient. Further, we have seen many patients with the typical clinical picture of "neurogenic" hypertension of fifteen years' duration who have shown advancing vascular disease in the ocular fundi, the heart and the kidneys. We haven't compared the renal changes resulting from high spinal anesthesia to the effects of pentobarbital. However, 2 patients anesthetized with sodium secobarbital did not show the decreased arteriolar resistance reported here.

Treatment of Experimental Renal Hypertension with Renal Extracts

DR. G. E. WAKERLIN, CLARENCE A. JOHNSON, PH.D., W. G. MOSS, M.S., and DR. M. L. GOLDBERG, Chicago: We have recently completed studies of the therapeutic effects of a more highly purified hog renin in 1 and 3 Gm. doses, partially purified heat inactivated hog renin in 3 Gm. doses, partially purified dog

renin in 3 Gm. doses and partially purified liver extract prepared after the manner of renin in 3 Gm. doses in renal hypertensive dogs. The results suggest that the therapeutic effects of hog renal extracts containing renin are not due to renin but to some other substance or substances in the extracts, as highly purified hog renin is less effective therapeutically than partially purified hog renin. There was no correlation between the reductions in blood pressure produced by highly purified hog renin (or failures thereof) and the antirenin titers of the dogs. The results confirmed the ineffectiveness of partially purified dog renin as an antihypertensive agent in experimental renal hypertension. They suggest that the antipressor substance is partially heat stable, as heat inactivated hog renin in 3 Gm. doses was moderately antihypertensive. However, none of the dogs treated with the heat inactivated extract showed antirenin. The results also suggest that the therapeutic effects are specific for kidney and not due to a foreign protein effect, since the hog liver extract was ineffective antihypertensively. Toxic manifestations, including fever, were never observed in any of the dogs.

DISCUSSION

DR. IRVINE H. PAGE, Indianapolis: These results add to the present belief that extracts of kidneys can lower blood pressure. Renin itself does not appear to be the agent causing lowering of arterial pressure, and I think Dr. Wakerlin has given up the belief that antirenin causes the lowering of pressure, though Goldblatt is by no means ready to give it up.

DR. CARL C. SMITH, Cincinnati: A kidney extract that we use in Cincinnati was produced as the result of a long series of experiments on rats and dogs and was used for patients. It contains no renin, angiotoninase, amylase, lipase or proteolytic activity. It did reduce the blood pressure of hypertensive rats, dogs and human subjects. This would seem to confirm the suggestion of other investigators that the ability of kidney extracts to lower high arterial blood pressures may be nonspecific and does not depend on their renin or angiotoninase activity.

The Precordial and Esophageal Electrocardiogram in the Wolf-Parkinson-White Syndrome (Anoma- lous Atrioventricular Excitation)

DRS. FRANCIS F. ROSENBAUM, FRANK N. WILSON and FRANKLIN D. JOHNSTON, Ann Arbor, Mich.: We have employed thoracic and esophageal leads in the study of 8 patients with anomalous atrioventricular excitation. Seven precordial leads were taken in all cases. Additional leads from the entire circumference of the chest at the level of the cardiac apex were used in 4 cases and multiple esophageal leads in 3 cases. Transitions from anomalous to normal complexes were observed in 2 patients. Atrioventricular rhythm was produced in 1 patient. Four of the patients had had paroxysmal tachycardia. These observations suggest that in the majority of cases of anomalous atrioventricular excitation ventricular activation begins on the posterior wall near the base and toward the right margin. The variation in form of the deflections suggests that there are corresponding variations in the order of ventricular activation, but some may depend on the position of the heart. The precordial electrocardiogram in anomalous atrioventricular excitation is not characteristic of either right or left bundle branch block. These studies offer some evidence to support the accessory conducting pathway theory of anomalous atrioventricular excitation. There is no definite correlation between the standard leads and the thoracic and esophageal leads in the cases studied thus far.

DR. HANS H. HECHT, Eloise, Mich.: The syndrome which Dr. Rosenbaum calls anomalous atrioventricular excitation is rare. I have had 2 cases which were studied with serial precordial and serial esophageal leads. Both showed, as expected, premature activation of the right ventricle. Any study of this type must employ a neutral electrode. R waves in chest leads are easily influenced by a non-neutral electrode placed, for instance, on the left leg or right arm.

DR. ROSENBAUM: We have seen electrocardiograms with short PR intervals and normal QRS complexes in patients with hypertensive heart disease. In our experience the precordial electrocardiograms of such patients have shown left ventricular hypertrophy.

(To be continued)

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American Journal of Clinical Pathology, Baltimore 13:627-680 (Dec.) 1943

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Treatment of Dysentery Carriers with Suceinylsulfathiazole: Observations on Minimal Effective Dose. P. S. Barker.—p. 443.
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Early Experimental Fistulas of Stomach. M. H. F. Friedman.—p. 447.

Annals of Surgery, Philadelphia 118:921-1088 (Dec.) 1943

*Planned Timing in Treatment of Wounds and Infections by Means of Infrequent Occlusive Dressings. F. B. Gurd, D. Ackman and F. Smith.—p. 921.
Continuous Caudal Analgesia in Surgery. J. L. Southworth and R. A. Hingson.—p. 945.
Advances in Spinal Anesthesia. R. A. Hingson, C. H. Ferguson and L. A. Palmer.—p. 971.
Further Experiences with Adrenal Cortical Extract in Treatment of Burn Shock. J. E. Rhoads, W. A. Wolff, H. Saltonstall and W. E. Lee.—p. 982.
Use of One Flap to Restore Extensive Losses of Middle Third of Face. A. J. Barsky.—p. 988.
Partial Fundusctomy (Proximal Gastrectomy). Review of 24 Cases. F. G. Connell.—p. 1000.
Peptic Ulcer and Chronic Gastritis. V. P. Collins.—p. 1005.
Protein Metabolism and Bed Sores. J. H. Mulholland, Co Tui, A. M. Wright, V. Viner and B. Shafiroff.—p. 1015.
Saphenous (Ligation) Resection in Obese. G. R. Dunlop.—p. 1024.
Carcinoma of Breast. II. Criteria of Operability (continued). C. D. Haagenen and A. P. Stout.—p. 1032.
Amputation Neuroma in Nerves Implanted in Bone. E. Boldrey.—p. 1052.
Intravenous Gelatin. A. Brunschwig, Nancy Corbun and C. D. Johnston.—p. 1058.
Surgical Treatment of Malignant Lymphoma. E. A. Gall.—p. 1064.

Treatment of Wounds by Infrequent Occlusive Dressings.—Gurd and his associates show how surgical principles can be coordinated by organized timed technic. The principles include efficient first aid by occlusive dressings, relief of pain, hemostasis and temporary splinting; excision or débridement of fresh wounds; (a) surgical antisepsis or its more recent descendant bacteriostasis; (b) surgical asepsis; wound (curtain) drainage by the employment of packing gauze impregnated with liquid petrolatum; closed or occlusive dressings; rest of the part; infrequent change of dressings with proper drainage. Closed infrequent dressings secure rest, prevent or limit bacterial contamination and improve the circulation while retaining within the dressing antibacterial and other beneficent products of the body's immunologic armamentarium in the exuded serum and chaining the wound by petrolatum impregnated gauze packing and promoting bacteriostasis. Six essential features are necessary for the success of this technic. Timing is of first importance. It is a mistake to attempt a surgical operation in fresh trauma before shock and hemorrhage are controlled. If operation is delayed too long, the risk of infection is enhanced. The second feature is efficient first aid in emergency cases by control

of hemorrhage, prevention of contamination by large sterile gauze dressings, minimization of shock by alleviation of pain, and splinting where necessary. The third feature is the control of shock and hemorrhage as far as it is possible before definitive surgical treatment is begun. This rule does not preclude the necessity for minimal early procedures to save life. The fourth factor is adequate surgery, which in fresh trauma includes exploration and wound excision and, in infection, adequate wound drainage. The fifth feature is immobilization of the part by plaster of paris, starch bandages or pressure dressings. The sixth factor is the timing of the change of dressing, which should be as infrequent as possible. The indication for changing the dressing and investigating the wound are persistence of pain, persistence of edema, persistence or development of fever and development of circulation difficulty.

Adrenal Cortex Extract in Burn Shock.—Rhoads and his collaborators report 53 cases seen at seven Philadelphia Hospitals between September 1942 and January 1943. The cases selected fulfilled four criteria: (1) at least 8 per cent of body surface burned; (2) at least an 8 point rise in the hematocrit; (3) local treatment by a tanning method except for the hands and face and genitalia; (4) plasma transfusion between the twelfth and the thirtieth hour after the burn amounting to at least two thirds of the estimated plasma deficit. They found that 12 patients with extensive superficial burns who received adrenal cortex extract did not retain plasma given by transfusion any better than did 13 control patients who received no extract.

Archives of Otolaryngology, Chicago 38:541-650 (Dec.) 1943

Analysis of 100 Consecutive Cases of Aural Discharge in an Army General Hospital. J. J. Conley.—p. 541.
Incorrect Treatment of Osteomyelitis of Frontal Bone. A. C. Jones.—p. 547.
Chronic Suppurative Otitis Media: Revision of Therapeutic Practice. L. J. Lawson.—p. 550.
Secretory Otitis Media: Illustrated with Photographs of Tympanic Membrane in Natural Color. I. Hantman.—p. 561.
Mucocoele of Frontal Sinus: Report of 5 Cases in Two of Which at Operation the Mucocoele was Found to be Empty. W. J. McNally, E. A. Stuart and A. E. Child.—p. 574.
Peroral Endoscopy. L. H. Clerf and T. T. Smith.—p. 597.

Bulletin New York Academy of Medicine, New York 20:1-70 (Jan.) 1944

Some Recent Developments in Physiology of Stomach and Intestine Which Pertain to Management of Peptic Ulcer. A. C. Ivy.—p. 5.
Benign and Malignant Lesions of Stomach. A. W. Allen.—p. 15.
Disorders of Digestive System Leading to Vitamin Deficiency States in Infants and Children. R. McIntosh.—p. 25.
Present Status of Ulcerative Colitis and Regional Enteritis. J. A. Barger.—p. 34.
Basis of Classification of Disorders from Psychosomatic Standpoint. L. S. Kubie.—p. 46.

Bull. of the U. S. Army Med. Dept., Washington, D. C. 72:1-90 (Jan.) 1944

*Sulfaguandine in Treatment of Bacillary Dysentery: Study of 520 Cases. S. G. Page Jr.—p. 50.
Clinical Survey of Scrub Typhus Fever. B. L. Lipman, R. A. Byron and A. V. Casey.—p. 63.
*Staphylococcal Enterotoxin in Bread Pudding. P. D. DeLav.—p. 71.
Neuromuscular Electrodiagnosis (an outline). S. Licht.—p. 74.
Aryclic Half-Splint. L. Mackta.—p. 81.
Hysterical Amblyopia: Report of Cases. H. J. Halpern.—p. 84.

Sulfaguandine in Bacillary Dysentery.—Page reports 520 cases of acute bacillary dysentery treated with sulfaguandine at the 151st Station Hospital in Northwest Africa. All presented typical symptoms of acute dysentery, with the passage of from five to fifty daily stools containing blood, pus and mucus and exhibited extreme prostration, chills, fever, nausea, vomiting, weakness, tenesmus, anorexia and dehydration. The patients were placed at strict bed rest in special isolated wards. The diet consisted of liquids such as bouillon, soups with added salt, tea, fruit juices, chocolate milk, liquid gruel and gelatins. The patients were usually able to retain a soft diet within the first twenty-four to forty-eight hours. A regular diet was given when their temperatures became normal. A ten day course of sulfaguandine was started immediately after a stool was obtained for culture. An initial dose of 7 Gm. was followed by 3.5 Gm. every four hours for the first forty-eight hours. After that 3.5 Gm. was given every eight hours to complete a ten day

course averaging a total dosage of 130 Gm. A bismuth compound 1 Gm. and camphorated tincture of opium 4 cc. were given every eight hours as necessary for the relief of severe abdominal griping and tenesmus. Fourteen patients failing to respond to the initial ten day course of sulfaguanidine were given a five day course of sulfadiazine. Patients were given a total of 3,000 to 3,500 cc. of fluid daily. There were no deaths or serious complications. Three cases of drug fever responded to withdrawal of the drug. More than 91 per cent (190 cases) of the positive cases were due to *Shigella paradysenteriae*, while not quite 8 per cent (18 cases) were caused by *Shigella sonnei*. *Shigella paradysenteriae* appears intermittently in the stools of both the treated and the untreated patients. Three negative stool cultures were inadequate as proof of the noninfectivity of the patient.

Staphylococcal Enterotoxin in Bread Pudding.—DeLay describes an outbreak of characteristic staphylococcal food poisoning. Enterotoxigenic staphylococci were obtained from bread pudding served at the meal following which the outbreak occurred. About 400 men were affected following an evening meal at which 600 men were served. The bread pudding consisted of bread chopped with a hand knife, pasteurized milk, evaporated milk, dried apricots, sugar and eggs. Following its preparation the pudding was placed on a shelf beneath a steam table and held until served at the evening mess of the following day. The table had been heated for one hour periods during the morning and noon mess; other than at these periods the pudding was held at about 75 F. These cases of food poisoning demonstrate the need for adequate refrigeration facilities and the necessity of using these facilities for certain foods.

Journal of Nat. Cancer Inst., Washington, D. C.

4:249-338 (Dec) 1943

- Principles of Species Adjustment. I Continuous Exposure R R Spencer and M B Melroy—p 249
Id. Discontinuous Exposure R R Spencer, M B Melroy and Dorothy Calnan—p 257
Experimental Chemotherapy of Tumors in Mice F C Turner—p 265
Enzymatic Activity of Normal Adult, Regenerating, Fetal and Neoplastic Hepatic Tissues of Rat. J P Greenstein and J W Thompson—p 271
Range in Activity of Several Enzymes in Normal and Neoplastic Tissues of Mice. J P Greenstein and J W Thompson—p 275
Note on Liver Catalase Activity of Pregnant Mice and of Mice Bearing Growing Embryonic Implants J P Greenstein and H B Anderfont—p 283
Effects of Feeding Heated Lard to Rats, with Histologic Description of Lesions Observed H. P. Morris, C D Larsen and S W Lippincott—p 285
Influence of Irradiation Killed Cells on Tumor Growth P S Henshaw, with technical assistance of H. L. Meyer—p 305
Induction of Pulmonary Tumors in Mice with Ethyl Carbamate (Urethane). A Nettleship and P. S. Henshaw, with technical assistance of H. L. Meyer—p 309
Ascorbic Acid Content of Tumors and Homologous Normal Tissues W. Van B Robertson—p 321
Spontaneous, Transplantable, Adrenal Cortical Tumor Arising in Strain C Mouse A. J. Dalton, J E Edwards and H B Anderfont, with technical assistance of Virginia C Briggs—p 329

Journal of Nervous and Mental Disease, New York

98:571-696 (Dec.) 1943

- Spasmodic Torticollis R. M. Patterson and S C Little—p 571
Notes for an Intimate History of Neurology and Psychiatry in America L. Casanajor—p 600
Calcified Subdural Hematoma D. A. Boyd Jr. and P. Merrell—p 609
Electric Shock Therapy in Treatment of Schizophrenia, Manic Depressive Psychoses and Chronic Alcoholism C. A. Neymann, V. G. Urse, J. J. Madden and M. A. Countryman—p 618
Some Aspects of Mind in Asthma and Allergy Comparative Personality Study of Two Groups of Clinical Cases E A Brown and L. Goitein—p 638
Death During Sulfonamide Treatment. Finding of Liver Cells in Brain O Pollak and J. M. Ziskind—p 648

Electric Shock Therapy.—Neymann and his associates report observations on electric shock therapy at the Cook County Psychopathic Hospital. In schizophrenic patients currents of 300 to 600 milliamperes at potentials between 90 and 120 volts lasting from three tenths to five tenths of a second usually produce a convulsion. In affective disorders more electrical energy is needed. A large part of the electrical energy is dissipated by passing through the skin. Daily treatments are feasible. It is suggested that the patient be treated until thoroughly confused; then he should be rested and examined as

to his insight. A second or third series of treatments may be given a patient who has not recovered after the first or second series. Subconvulsive shocks are painful and terrifying. Convulsive electric shocks are not painful and produce a short retrograde amnesia. Treatment with subconvulsive shocks was ineffective. The pure psychic suggestion of this treatment did not have much if any effect in producing the recoveries observed. Ninety schizophrenic patients were treated by this method. Thirty-one are at present listed as recovered. Twenty-one of them have been working for from six to twenty months. Eleven have been listed as improved. The recovery rate was greatest in the paranoid group. Old deteriorated schizophrenic patients who have been psychotic for years are not greatly benefited by this treatment. Fifteen patients with depressive states were treated. Eleven with depressions recovered, 4 improved. Five chronic alcoholic addicts were treated without favorable results. Dementia or flattening of the personality was not observed in the recovered group after electric shock therapy.

Death During Sulfonamide Treatment.—The subject of the report by Pollak and Ziskind was a girl aged 14 with disseminated lupus erythematosus who acquired otitis media and pneumonia complicated by cerebral signs. She was treated at different times with sulfathiazole, sulfanilamide and sulfadiazine. Necropsy revealed toxic reactions but no inflammation, particularly in the liver, kidneys, adrenal glands, pancreas and nervous system. Fatty degeneration in the liver and kidneys was far in excess of the fatty degeneration commonly accompanying pneumonia. The meningitis was obviously terminal, but its occurrence is evidence that the sulfonamides failed in inhibiting the inflammatory process, which was due to the otitis. Emboli of necrotic cells were found in the brain. These cells are most probably liver cells carried to the brain by the circulation of the blood. It cannot be decided whether the untoward effects were caused by the direct toxic action of the sulfonamides or whether they were due to an idiosyncrasy, to a disturbance in the metabolism, to an acquired hypersensitivity subsequent to the preceding sulfonamide therapy or to an especial susceptibility caused by lupus. Since administration of sulfonamides to patients with lupus erythematosus or in this disease associated with arthritis and rheumatic fever has frequently turned out to be dangerous (Fisher), the greatest caution is necessary when administering sulfonamides.

Medicine, Baltimore

22:287-424 (Dec.) 1943

- The Iris Innervation of Iris of Albino Rabbit as Related to Its Function. Theoretical Discussion of Abnormalities of Pupils Observed in Man. O. R. Langworthy and L. Ortega—p 287
Cold Hemagglutination. An Interpretative Review. D. Stats and L. R. Wasserman—p 363.

Ohio State Medical Journal, Columbus

40:1-100 (Jan) 1944

- Role of Emergency Medical Service in Gas Defense. W. P. Dearing—p 17.
Country Doctor Diagnoses a Family. P S Craig—p 22
Meningococcal Adrenal Purpura in Adults H E Simmel—p 23
Management of Magnetic Foreign Bodies in Eye P G Moore—p 26
Irritation of Nasal Mucosa in Industry. F. W. Dixon—p 36
Maxillofacial Injuries. C. J. Streicher and R. S. Rosedale—p 38
Foreign Body in Bronchus with Pneumothorax Occurring in Opposite Side of Chest R. S. Rosedale and J. M. Harley—p 41
Human Ovulation K Hale—p 45
Thrombocytopenia Purpura Associated with Exophthalmic Goiter. Review of Available Literature and Case Report S D Conlin and P. J. Shank—p 47.
Dolorimetry. Quantitative Method of Measuring Pain and Deep Sensibility. L. J. B. Gluzek—p 49

Public Health Reports, Washington, D. C.

58:1881-1908 (Dec 24) 1943

- Use of Curtain Walls in Ratproofing R. Perpes—p 1881
Sickness Absenteeism Among Industrial Workers, Second Quarter of 1943, with Note on Occurrence of Respiratory Diseases, 1924-1942 W. M. Gafsaer—p 1885
Benefits Accruing from Ratproof Construction of Vessels G C Sherrard—p 1888

58:1909-1940 (Dec. 31) 1943

- Survey of Statistical Studies on Prevalence and Incidence of Mental Disorder in Sample Populations P. Lenton, C. Tinker and W. M. Cooper—p 1909

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- *Planned Timing in Treatment of Wounds and Infections by Means of Infrequent Occlusive Dressings. F. B. Gurd, D. Ackman and F. Smith—p. 921.
Continuous Caudal Analgesia in Surgery. J. L. Southworth and R. A. Hingson—p. 945.
Advances in Spinal Anesthesia. R. A. Hingson, C. H. Ferguson and L. A. Palmer—p. 971.
Further Experiences with Adrenal Cortical Extract in Treatment of Burn Shock. J. E. Rhoads, W. A. Wolff, H. Saltonstall and W. E. Lee—p. 982.
Use of One Flap to Restore Extensive Losses of Middle Third of Face. A. J. Barsky—p. 988.
Partial Fundusctomy (Proximal Gastrectomy). Review of 24 Cases. F. G. Connell—p. 1000.
Peptic Ulcer and Chronic Gastritis. V. P. Collins—p. 1005.
Protein Metabolism and Bed Sores. J. H. Mulliholland, Co. Tu, A. M. Wright, V. Vinci and B. Shafiroff—p. 1015.
Saphenous (Ligature) Resection in Obese. G. R. Dunlop—p. 1021.
Carcinoma of Breast. II. Criteria of Operability (continued). C. D. Haagensen and A. P. Stout—p. 1032.
Amputation Neuroma in Nerves Implanted in Bone. E. Boldrey—p. 1052.
Intravenous Gelatin. A. Brunschwig, Nancy Corbin and C. D. Johnston—p. 1058.
Surgical Treatment of Malignant Lymphoma. E. A. Gall—p. 1064.

Treatment of Wounds by Infrequent Occlusive Dressings.—Gurd and his associates show how surgical principles can be coordinated by organized timed technic. The principles include efficient first aid by occlusive dressings, relief of pain, hemostasis and temporary splinting; excision or débridement of fresh wounds; (a) surgical antisepsis or its more recent descendant bacteriostasis; (b) surgical asepsis; wound (curtain) drainage by the employment of packing gauze impregnated with liquid petrolatum; closed or occlusive dressings; rest of the part; infrequent change of dressings with proper damage. Closed infrequent dressings secure rest, prevent or limit bacterial contamination and improve the circulation while retaining within the dressing antibacterial and other beneficent products of the body's immunologic armamentarium in the exuded serum and draining the wound by petrolatum impregnated gauze packing and promoting bacteriostasis. Six essential features are necessary for the success of this technic. Timing is of first importance. It is a mistake to attempt a surgical operation in fresh trauma before shock and hemorrhage are controlled. If operation is delayed too long, the risk of infection is enhanced. The second feature is efficient first aid in emergency cases by control

of hemorrhage, prevention of contamination by large sterile gauze dressings, minimization of shock by alleviation of pain, and splinting where necessary. The third feature is the control of shock and hemorrhage as far as it is possible before definitive surgical treatment is begun. This rule does not preclude the necessity for minimal early procedures to save life. The fourth factor is adequate surgery, which in fresh trauma includes exploration and wound excision and, in infection, adequate wound drainage. The fifth feature is immobilization of the part by plaster of paris, starch bandages or pressure dressings. The sixth factor is the timing of the change of dressing, which should be as infrequent as possible. The indication for changing the dressing and investigating the wound are persistence of pain, persistence of edema, persistence or development of fever and development of circulation difficulty.

Adrenal Cortex Extract in Burn Shock.—Rhoads and his collaborators report 53 cases seen at seven Philadelphia Hospitals between September 1942 and January 1943. The cases selected fulfilled four criteria: (1) at least 8 per cent of body surface burned; (2) at least an 8 point rise in the hematocrit; (3) local treatment by a tanning method except for the hands and face and genitalia; (4) plasma transfusion between the twelfth and the thirtieth hour after the burn amounting to at least two thirds of the estimated plasma deficit. They found that 12 patients with extensive superficial burns who received adrenal cortex extract did not retain plasma given by transfusion any better than did 13 control patients who received no extract.

Archives of Otolaryngology, Chicago 38:541-650 (Dec.) 1943

- Analysis of 100 Consecutive Cases of Aural Discharge in an Army General Hospital. J. J. Conley—p. 541.
Incorrect Treatment of Otitis Media of Frontal Bone. A. C. Jones—p. 547.
Chronic Suppurative Otitis Media. Revision of Therapeutic Practice. L. J. Lawson—p. 550.
Secretory Otitis Media. Illustrated with Photographs of Tympanic Membrane in Natural Color. I. Hantman—p. 561.
Mucocoele of Frontal Sinus. Report of 5 Cases in Two of Which at Operation the Mucocoele was Found to be Empty. W. J. McNally, E. A. Stuart and A. E. Childe—p. 574.
Peroral Endoscopy. L. H. Clerf and T. T. Smith—p. 597.

Bulletin New York Academy of Medicine, New York 20:1-70 (Jan.) 1944

- Some Recent Developments in Physiology of Stomach and Intestine Which Pertain to Management of Peptic Ulcer. A. C. Ivy—p. 5.
Benign and Malignant Lesions of Stomach. A. W. Allen—p. 15.
Disorders of Digestive System Leading to Vitamin Deficiency States in Infants and Children. R. McIntosh—p. 25.
Present Status of Ulcerative Colitis and Regional Enteritis. J. A. Barger—p. 34.
Basis of Classification of Disorders from Psychosomatic Standpoint. L. S. Kubie—p. 46.

Bull. of the U. S. Army Med. Dept., Washington, D. C. 72:1-90 (Jan.) 1944

- *Sulfaguanidine in Treatment of Bacillary Dysentery: Study of 520 Cases. S. G. Page Jr.—p. 50.
Clinical Survey of Scrub Typhus Fever. B. L. Lipman, R. A. Byron and A. V. Casey—p. 63.
*Staphylococcal Enterotoxin in Bread Pudding. P. D. DeLav—p. 71.
Neuromuscular Electrodiagnosis (an outline). S. Licht—p. 74.
Acute Half-Splint. L. Mackta—p. 81.
Hysterical Amblyopia: Report of Cases. H. J. Halpern—p. 84.

Sulfaguanidine in Bacillary Dysentery.—Page reports 520 cases of acute bacillary dysentery treated with sulfaguanidine at the 151st Station Hospital in Northwest Africa. All presented typical symptoms of acute dysentery, with the passage of from five to fifty daily stools containing blood, pus and mucus and exhibited extreme prostration, chills, fever, nausea, vomiting, weakness, tenesmus, anorexia and dehydration. The patients were placed at strict bed rest in special isolated wards. The diet consisted of liquids such as bouillon, soups with added salt, tea, fruit juices, chocolate milk, liquid gruel and gelatins. The patients were usually able to retain a soft diet within the first twenty-four to forty-eight hours. A regular diet was given when their temperatures became normal. A ten day course of sulfaguanidine was started immediately after a stool was obtained for culture. An initial dose of 7 Gm. was followed by 3.5 Gm. every four hours for the first forty-eight hours. After that 3.5 Gm. was given every eight hours to complete a ten day

Book Notices

A. M. A. Interns' Manual. Issued Under the Direction and Supervision of the Council on Medical Education and Hospitals and the Council on Pharmacy and Chemistry of the American Medical Association. [Second edition.] FabriKoid. Price, 60 cents. Pp. 217. Chicago: American Medical Association, 1943.

This volume has been prepared with the needs of the intern as a foremost consideration. It has been designed, therefore, to provide such information as will be most helpful to medical graduates in their first period of hospital training. Thus it includes valuable data in relation to laboratory procedures, common emergencies, treatment of acute poisoning, drug therapy, dietary management, physical therapeutics, internship organization, medical licensure and other special subjects.

In the first chapter the Council on Medical Education and Hospitals describes the types of internships acceptable to the American Medical Association, the training and experience that should be obtained, the mutual obligations and relationships of hospitals and interns, the recording of educational services in the biographic files of the American Medical Association, medical licensure requirements and present standards for specialty training and certification. As further aid, particularly in relation to subsequent appointments, information has been included regarding federal, state and county services, public health, teaching opportunities, research, industrial practice and other medical assignments.

The section on Drug Administration and Materia Medica will be welcomed by all who wish to prescribe in a thoughtful and scientific manner. To this end the Council on Pharmacy and Chemistry has supplied full directions regarding methods of administration, dosage, prescription writing, equivalent weights and measures, and tables of solubilities. In addition, there is an extensive list of fifty pages giving the names, uses and dosage of all items included in the thirteenth edition of *Useful Drugs*. These have been conveniently arranged in alphabetical order.

The Council on Foods and Nutrition has contributed valuable tables and data on diets and nutrition. Similarly the Council on Physical Therapy has presented a section on physical agents that will give the interns a clearer understanding of the utilization of heat therapy, massage, therapeutic exercise, radiant energy, hydrotherapy, fever therapy and the application of low frequency currents. The legal aspects of internships have been carefully interpreted by the Bureau of Legal Medicine and Legislation of the American Medical Association. Its report on the lawful scope of intern practice should be of interest not only to interns and resident physicians but also to hospital administrators and members of intern committees. The book closes with a description of the various bodies which comprise the American Medical Association so that the reader may become thoroughly familiar with the functions and services of the organization.

The present manual is of convenient size, durable and attractively bound. It may be used either independently or as a supplemental reference in connection with established hospital rules and formularies. Its usefulness will not cease with the completion of the internship, for this handbook will continue to serve as a valuable source of reference in later periods of residency training and practice.

Notes for the R. M. O. of an Infantry Unit. By C. P. Blacker, M.C., M.A., M.D. Oxford War Manuals. General Editor: Lord Horder, G.C.V.O. Cloth. Price, \$1.50. Pp. 77. New York & London: Oxford University Press, 1943.

An excellent summary of the many and varied duties of a regimental medical officer or a regimental surgeon, as he is called in our army, is contained in the book by Dr. C. P. Blacker. In the preface the author revealed that his background consisted of combat experience as an infantry officer in World War I and three years' service as a regimental medical officer in the same organization in World War II. No attempt is made to describe official procedures or duties, but a wealth of practical and pertinent information is found in all sections of the book. It is especially recommended to the young medical officer who has just completed his medical courses and is about to enter the service. The average American might find a slightly different terminology and the use of abbreviations, a

common feature of British medical military literature, a little disconcerting at first. However, Dr. Blacker attempts to overcome these difficulties by clarity of description and the addition of the full name in parenthesis after an abbreviation is first used. On the whole it is a sound and practical guide to medical officers, both British and American.

In Divided and Distinguished Worlds: Religion and Rhetoric in the Writings of Sir Thomas Browne. By Dewey Kiper Ziegler. Cloth. Price, \$2. Pp. 104. Cambridge, Mass.: Harvard University Printing Office, 1943.

This essay is a careful analysis of the "Religio Medici" of Sir Thomas Browne. It was written by its author as an essay required of undergraduate candidates for honors degrees. He has made a thorough study of the work which was the favorite of Sir William Osler, and his analysis of the rhetoric and science shows extraordinary insight. Ziegler concludes that Sir Thomas Browne strictly divided the spheres of religion and science, as, incidentally, Pasteur did many years later. Of religion Browne demanded only imaginative satisfaction. His "Religio Medici," though it fails as a philosophy, is a magnificent demonstration of the use of language for emotional, intellectual and sensuous enjoyment.

Kaiser Wakes the Doctors. By Paul De Kruijf. Cloth. Price, \$2. Pp. 158. New York: Harcourt, Brace & Company, 1943.

A favorite indoor sport among physicians today is the "panning" of Paul de Kruijf, whose enthusiasms frequently eclipse his judgment and perhaps sometimes even his powers of observation. His current enthusiasm is the system of medical care established by Henry Kaiser for the workers in his shipbuilding plants. At least two medical writers, Drs. George H. Kress in *California and Western Medicine* and Floyd T. Romberger in the *Journal of the Indiana State Medical Association* have meticulously picked this book to pieces and left it of little of virtue. Those readers who think it worth while may refer to these contributions to confirm the opinion that the book is more propaganda than qualified sociological or medical study.

The Biochemistry of Malignant Tumors. By Kurt Stern, M.D., and Robert Wilhelm, M.D., Professor, University of Philippines, Manila. Cloth. Price, \$12. Pp. 951. Brooklyn: Chemical Publishing Company, Inc.; Reference Press, 1943.

This book reviews the literature of biochemical research in the field of cancer to the end of 1941. It is an enlarged continuation of the book on the same subject published by the same authors in Vienna in 1936. The chapter captions will indicate the nature and scope of the contents: inorganic chemistry, organic chemistry, physical chemistry, enzymes, nutrition and vitamins, metabolism, endocrines, immunology, tumor origin and growth, tumor diagnosis. An enormous amount of material is reviewed. Thus the number of names in the author index is about 3,500. The work appears to have been well done. The book will facilitate a study of the literature of the biochemistry of cancer.

The Case of a A. L. —, Aged 56: Some Curious Medical Aspects of Lincoln's Death and Other Studies. By Otto Eisenschiml. Cloth. Price, \$3.50. Pp. 55, with 3 illustrations. Chicago: Abraham Lincoln Book Shop, 1943.

In a small well written booklet Dr. Eisenschiml carefully analyzes the fatal gunshot wound of President Lincoln. Every detail of the medical aspects of the assassination is reviewed, such as the exact position of President Lincoln and John Wilkes Booth at the time of the shooting, the probable path of the missile through Lincoln's brain, the medical and nursing care given to Lincoln after the shooting, and the varied postmortem reports. The addition of the last chapter entitled "If Lincoln Had Lived," though an intriguing historical speculation, detracts from an otherwise scientific treatise.

Metabolism Manual. By Jessie K. Lex, R.T., M.T., Chief Medical Technologist, the Parker Diagnostic Clinic, Peoria, Illinois. Cloth. Price, \$1.75. Pp. 56, with illustrations. Peoria: Metabolism Department, Parker Diagnostic Clinic, 1943.

This misnamed monograph actually deals with the technic and interpretation of the basal metabolism test as performed with an apparatus of the Roth-Benedict type. It is intended to instruct the technician in handling both the apparatus and the patient, and in distinguishing between a reliable and a faulty test. It is clear that the authoress is a well trained and conscientious technician. But the material is incomplete and not well presented. The style is pompous and prefix.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SYSTEMIC DISEASE AND FERTILITY

To the Editor:—In May 1943 a patient had a sudden onset of gross hematuria while apparently in good health. He is 25 years old and has no history of kidney disease. Repeated ureteral catheterization showed the hematuria to be bilateral. Kidney function was unimpaired; blood pressure stayed at its old level of 126/82; there was no anasarca or significant drop in plasma proteins. After four months, two of which were spent in bed, the hematuria cleared, but the albuminuria persists in some degree to the present. The diagnosis, arrived at after some hesitation, was acute glomerulonephritis, now in the subacute stage. The nonprotein nitrogen incidentally was never elevated, and the sedimentation rate was normal throughout. The red blood cell count dropped from 5.3 million to 4.5 million, but the white blood cell count remained the same. He never had any temperature rise. He and his wife have been trying to conceive for the last six months without success. His sperm count is about 17.5 million per cubic centimeter and the sperm seem actively motile, with good progress across the field. There are fewer than 5 per cent abnormal forms. His ejaculate contains about 2.5 cc. The Huhner test is positive for living, motile sperm after three hours. Before beginning investigation of the wife, I should like to ask whether the patient's nephritis would have any effect on his ability to conceive. Could you give me any references in the literature to the effect of systemic disease on sperm formation and conception? Is anything known about the likelihood for abnormality in the fetus in such cases?

M.D., New York.

ANSWER:—Stock breeders have long recognized the depressing effect of systemic disorders on the fertility of their flocks, droves and herds. In recent years much evidence of a similar phenomenon in human beings has accumulated. Constitutional ailments are frequently correlated with poor semen, which improves when the former are corrected (Meaker, S. R., and Vose, S. N.: *The Nature of Human Infertility*, *THE JOURNAL*, Oct. 26, 1940, p. 1426). The treatment of such conditions in either sex is followed by pregnancy often enough to make a cause and effect relationship highly probable.

In these cases the first pregnancy not uncommonly terminates in abortion. Such an event signifies that the fertility level has been raised above the threshold of conception but is not yet high enough to endow the fertilized ovum with that degree of vitality necessary for its continued growth. The result is early ovular death rather than the development of a monster. Mall states categorically that all monstrosities are due to faulty implantation and not to imperfections inherent in the ovum.

The constitutional disorders known to depress fertility include the entire group of endocrine underfunctions, most often those of the anterior pituitary and the thyroid; chronic poisonings, notably toxic absorption from foci of infection; faults of diet and hygiene, and conditions leading to general debility. It is conceivable that acute glomerulonephritis might fall into this last category, but no observations as to its effect on fertility have been recorded.

The majority of highly fertile men show sperm counts of 100 million or better. Evaluations of morphology vary according to the standards of the individual examiner, but all experienced workers agree that even the best specimens contain around 15 per cent of immature or otherwise imperfect forms.

Another specimen of semen should be examined when the patient has entirely recovered from the effects of his illness. If this is not found to be satisfactory as to numbers, morphology, motility and endurance of the spermatozoa, further study of the case will be indicated, with special reference to endocrine factors.

"SENILE WARTS" REQUIRE INVESTIGATION

To the Editor:—Many elderly persons are distressed and disfigured by "senile warts." Is there any satisfactory "wholesale" treatment for this condition. Must they be attacked and remedied individually?

Ursula G. Mandel, M.D., Los Angeles.

ANSWER:—Senile warts are not warts in the strict sense. The term is usually applied to what are either senile keratoses or seborrheic keratoses. There is a great deal of confusion in the literature about these diseases. Eller and Ryan (*Senile Keratoses and Seborrheic Keratoses*, *Arch. Dermat. & Syph.* 22:1043 [Dec.] 1930) have presented a clear differentiation between them, and the discussion that followed their paper is illuminating. Both forms are local growths not amenable, as far as is known, to any general treatment. The important point brought out by the paper cited is that, on the face especially, less often on the neck or trunk, lesions that appear clinically to

be seborrheic keratoses sometimes prove on microscopic investigation to be senile keratoses. They are therefore potentially dangerous growths masquerading as comparatively innocent ones. Efficient treatment of either form requires an investigation to determine whether epitheliomatous degeneration has begun under the surface tumor.

OPTIC MANIFESTATIONS ASSOCIATED WITH MALARIA OR CINCHONISM

To the Editor:—What is the etiology and mechanism of production of the exudative papillitis found in recurrent malaria? Is it due to the malaria, to the quinine or to the atabrine? A sufficient number of visual field changes in patients with recurrent malaria (five or more attacks), generally with varying amounts of internal antimalarial medication, have occurred to make these studies of importance. The classic retinal picture in cinchonism is, of course, contracted retinal arteries, pallid retina and contracted fields (Duke-Elder, vol. 3, p. 3032). Goodman and Gilman (*The Pharmacological Basis of Therapeutics*) concur (1940 ed., p. 910) but on page 907 (cardiovascular system) indicate that vasodilatation is part of the toxicology. What are the true cause and mechanism of the exudative vasculitis of the disk?

Major, M. C., A. U. S.

ANSWER:—It is impossible in the present state of our knowledge to give a categorical answer to these questions. It is generally accepted that, in cinchonism, the optic disk is pale and the retinal arterioles are constricted. It is not definitely known, however, whether the loss of vision is the result of primary ischemia of the retina or whether it is due to direct toxic action of quinine on the ganglion cells of the retina. The vasodilating action of quinine seems to be a selective one affecting particularly the vessels in the skin and in the extremities. Advanced degrees of vasodilatation are associated in the main only with toxic doses of the drug. No specific toxic effects have been noted with the use of atabrine in accepted dosage or even after considerably larger doses than are prescribed ordinarily. Certain psychotic manifestations have been ascribed to the staining of the brain similar to that which occurs in the skin.

It must be assumed, therefore, that the lesions noted in the optic nerve and retina and presumably the changes in the visual fields are associated with the malaria and not with the medication. The exact mechanism of the production of these lesions is not so clear, however. With *Calci-parum* infections, in cases of malignant malaria, the capillaries, including those in the retina, choroid and brain, are filled with red cells containing the plasmodia, and neighboring tissue lesions can result either from a direct toxic action or from actual thromboses of vessels. With vivax infections, however, this packing of the capillaries does not occur, apparently. Lesions developing in the retina and choroid during an acute febrile stage of vivax malaria must be assumed, then, to be the result of the general toxemia and to be similar to those found in association with other febrile diseases such as pneumonia or influenza. It must be borne in mind, however, that most patients with recurrent malaria are anemic, cachectic and undernourished. Some of the hemorrhages in the retina, the lesions of the optic nerve and the changes in the fields of vision may then be due to the associated anemia, malnutrition and avitaminosis rather than to the malaria infection itself. Further study on these points is definitely indicated.

EXOSTOSIS OF AUDITORY CANAL

To the Editor:—At the age of 47 I suddenly find that I have an exostosis of the ear canals. There is no history of any ear disease other than a mild fungus infection several years ago. When examined at that time no mention was made of an existing exostosis. Is exostosis of the ear canal a congenital disease?

Lieutenant Commander, U.S.N.R.

ANSWER:—By exostosis is meant a circumscribed bony growth of the external auditory canal as distinguished from the flatter, broader and more diffuse form which goes by the name of hyperostosis. As Politzer says, one is seldom in a position to observe clinically the growth of these exostoses, as they are not accompanied by inflammatory phenomena. Symmetrical multiple bilateral exostoses are probably hereditary in origin and are thought to be as a rule true bony tumors. Some solitary growths may resemble externally true bony tumors but are thought by many to arise in part, at least, from ossification of chondromas or hyperplastic periostitic areas caused by minor traumas and irritations.

If the original observation as mentioned was accurate and it is reasonably certain that no growth was present several years previously, then the condition present is surely not congenital but acquired. It is only fair to say that there is much about the origin and histologic structure of these growths which is obscure and indefinite. Dogmatic statements are hence undesirable.

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INFLAMMATORY DISORDERS OF THE SKIN OF THE FEET

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ST. PAUL

The anatomic peculiarities of the feet, the fact that they are organs of locomotion and the fact that they are enclosed in shoes make the skin which covers them subject to certain diseases. This paper is part of a symposium on cutaneous disorders of the feet; so stress will be laid on conditions which occur on the feet alone, and little will be said about those in which the feet are involved as part of a disseminated process.

The diagnostic approach to cutaneous diseases of the feet should be made with an open mind. There is a tendency among both the public and doctors to call all diseases of the skin of the feet fungous infections. It is actually impossible to make a diagnosis of a fungous infection without microscopic studies of scrapings from the cutaneous lesions or from their contents. Often the aid of cultures is also necessary. Even if a fungus is found, it is often difficult to determine whether it is a saprophytic or a pathogenic organism. The public seems to have a preconceived idea that football coaches, athletic trainers and the like are capable of diagnosing and treating fungous infections, or "athlete's foot." This idea is readily accepted by the coaching fraternity. Some of the athletic instructors have even gone so far as to endorse certain compounds as cures for any and all inflammations of the feet. My associates and I seldom see high school students or college men who participate in athletics and have cutaneous disorders of the feet who have not been treated for various lengths of time by their coaches. Fewer diagnostic errors would be made if fungous infections were diagnosed as a last resort.

The examination of the feet is most important. It is absolutely necessary to examine both feet. The patient is often reluctant to take the covering off both feet, but this should be insisted on. The hands should also be examined, and if an eruption is present it is important to know whether the eruption started on the hands or on the feet. The skin should be examined at least up to the knee as well as the part covered by the eruption. All parts of the feet should be examined. The circulation, the shape of the feet and physical abnormalities should be noted. The webs of the toes, the nails and the paronychia tissues are to be carefully considered.

It is equally important to examine the footwear. Woolen socks are generally contraindicated in inflam-

matory conditions of the feet. They absorb and hold moisture and produce maceration of the inflamed skin. Cotton footwear is much less irritating. Shoes are to be examined for type and comfort as well as fit. Generally a comfortable shoe is a well fitted shoe. Perforated shoes and open toed shoes are far superior to the usual footwear when inflammation exists. They probably are preferable at all times, but certain occupations as well as the winter season make their general use impracticable. Thick soled shoes as well as rubber soled shoes are undesirable in the presence of inflammation because they increase perspiration and cause maceration. Thick soled or rubber soled shoes also cause inflammatory conditions by producing increased perspiration which results in maceration, and this in turn is followed by inflammation produced by the common saprophytic organisms on the feet. It is important to know how often the patient changes his shoes, how many shoes he has and whether he wears one pair for work and others when he is not working. Shoes should be changed frequently in the presence of inflammatory disease. Wet, soggy shoes always aggravate inflammatory conditions. The patient should have enough changes to allow the shoes to dry thoroughly before they are worn.

Certain occupations add to the hazards and often are predisposing causes of inflammatory conditions of the feet. This is especially true of butchers, workers in meat packing plants, butter makers and people who wear rubber boots or rubbers and stand in water or on a wet floor all day. When these people get inflammatory diseases of the feet it is usually necessary to have them stop work temporarily or change to another occupation. Oil soaked shoes worn in some occupations are aggravating factors in inflammations. This is especially true if the patient does not leave his work shoes at the plant but wears them walking around after work.

The general public is tempted to use all sorts of remedies because of persuasive newspaper and radio advertising. It should be obvious that a "cure all" does not exist. The type of treatment varies with the stage and the degree of each inflammation, with every case and with each recurrence in the same patient. Most of the remedies advertised are too strong for general use and add to the existing trouble. Home remedies such as tincture of iodine, gasoline and kerosene usually aggravate even the mildest inflammation. Soaking shoes in formaldehyde has caused many a sore foot and did not benefit or prevent cutaneous diseases of the feet. The most discussed and advertised use of equal parts of phenol and camphor has done a great deal of harm and has been said even to have caused gangrene in some instances. Generally foot powders are harmless even though they often are not beneficial.

The care of the feet and of footwear is important in preventing inflammations as well as in treating inflammatory disease. Shoes that rub, pinch or bind the

This paper, in a symposium on "Cutaneous Disorders of the Foot," is published under the auspices of the Section on Dermatology and Syphilology.

From the Ancker Hospital and the Division of Dermatology and Syphilology of the University of Minnesota Medical School, Dr. H. E. Nicholson, director.

feet should not be worn. Shoes with run down or worn heels which place the feet in abnormal positions are harmful. The nails should be cleaned, cut and trimmed regularly. The feet should be bathed often and dried carefully. It is especially important to dry between the toes, where many inflammations start.

Constitutional factors also play an important part in inflammatory diseases of the skin of the feet. The circulation can and often does have a determining role in the effect of local treatment. The build and the weight of the patient have a definite effect on therapy. It is well known that obese people do not respond to local treatment as well as others. Sweat is an aggravating factor in some inflammatory conditions of the skin of the feet, especially contact dermatitis and fungous infections. The salt in sweat irritates open lesions, and often the eruption cannot be controlled during periods of excessive sweating. The seasons, emotional factors such as nervous exhaustion, worry and fright, and fatigue have an uncontrollable effect on sweating of the feet and secondarily on inflammations of the skin. Chronic inflammations of the feet usually become worse after excessive sweating in the spring, after alcoholic bouts and following periods of nervous exhaustion, over which local treatment has little if any control.

The inflammatory disorders of the skin of the feet to be discussed will be taken in the approximate order of their frequency and importance.

CONTACT DERMATITIS

Contact dermatitis usually appears on the dorsa or the sides of the feet and is rarely seen on the soles. The nails and the interdigital webs are seldom involved.

The eruption may range from inflammatory weeping vesicles to diffuse dry scaling plaques. The location is quite the opposite of that of fungous infections. As in contact dermatitis elsewhere, the most prominent symptom is itching. This varies both with the patient and with the degree of inflammation. Swelling may be pronounced enough to prohibit the wearing of shoes. The usual causes of contact dermatitis are shoe dye, sock or stocking dye, leather or shoe polish. Dermatitis from poison ivy is frequently seen on the feet of bathers and children in the summer time. Leg makeup and nylon hose have caused a certain amount of contact dermatitis in recent years. Although nail polish is frequently worn, it seldom if ever causes dermatitis in this area. A careful history aided by patch tests or actually withdrawing and later wearing the suspected article will generally reveal the cause. It is important not to overtreat contact dermatitis. If the feet are swollen, wet packs of boric acid or a solution of aluminum acetate in addition to boric acid or warm water soaks two or three times a day can be used. The packs should be made of approximately twenty layers of washed surgical gauze and changed frequently. Rubber, oiled silk and other impermeable substances should not be applied on the outside of the pack because they defeat the purpose of the pack by prohibiting evaporation and causing maceration. Boric acid in a saturated solution should never be used because the boric acid crystallizes as the pack dries and the crystals mechanically irritate open lesions. After the edema has subsided, a paste consisting of 3 to 5 per cent ichthammol in paste of zinc oxide is applied. The patient is advised to wear perforated shoes for some time after the eruption has healed.

PYODERMA

When pyoderma is used in the broad sense meaning any pyogenic infection it designates a condition that is relatively common on the feet. Inflammations may start following injury from falling objects, shoe nails, stone bruises on bare feet, tight shoes, rubbing shoe heels, ingrown toe nails and many other causes. When the cause is removed, it often is not necessary to keep the patient off his feet. Warm water or boric acid soaks at intervals during the day and 5 per cent sulfathiazole ointment applied at night and between soaks usually are sufficient. For the more severe pyogenic infections rest in bed, elevation of the feet and wet packs of boric acid or of solution of aluminum acetate are applied until the patient becomes ambulant. Sulfathiazole is not given by mouth unless the infection is severe or accompanied by lymphangitis or lymphadenitis. The usual precautions against tetanus are taken when necessary.

Certain types of pyogenic infections deserve special mention. Ecthyma has been one of the most severe medical problems of the war in Africa. The British literature shows an astonishing number of articles under many different names devoted to ecthyma. It seems that the soldiers get indolent pyogenic ulcers following insect bites and other injuries which will not heal under conditions of desert warfare. The lack of bathing, the long marches and the ever present sand in the air are given as reasons why the lesions do not heal. Ecthyma as we see it in Minnesota usually responds promptly to 5 per cent sulfathiazole ointment. The addition of 3 per cent urea to sulfathiazole ointment seems to be beneficial.

Folliculitis due to oil is seen on the feet of mechanics, press workers, engineers and others who wear oil soaked shoes while working. The recurrence of such infections has become a real industrial problem because these people usually are skilled workers and cannot be shifted about. The patients are advised to change socks at least once a day, to bathe their feet twice daily, to change shoes every two or three days and to wear different shoes while working. Sulfathiazole ointment is used locally. If the eruption recurs, the usual protective creams are used.

Erysipelas, cellulitis, furunculosis and impetigo occasionally occur on the feet. The sulfonamide drugs are always administered cautiously by mouth and only when there are real indications. When sulfonamide drugs are given by mouth the urine and the blood are checked regularly and careful observations made for other toxic signs. It is rare to find a case of "sulfathiazole fast" impetigo contagiosa, although it is quite common to have sulfathiazole ointment cause contact dermatitis.

PARONYCHIA

Paronychia is usually due to pyogenic infection, fungous infection, psoriasis or syphilis. Paronychia caused by pyogenic organisms is generally secondary to ingrown toe nails. The cause is evident but the treatment is difficult. Often the outer third of the nail must be removed and the part then treated with wet packs and soaks in the manner previously stated. Pyogenic paronychia often is accompanied or followed by pyogenic granuloma which is not affected by local applications and must be destroyed by some type of cautery. Paronychia associated with psoriasis is really due to pyogenic organisms and is started by psoriatic distortion of the nail. The psoriatic nail is often benefited by superficial roentgen therapy, while the par-

onychia is treated as one of pyogenic origin. Syphilitic paronychia is not particularly distinctive but is usually accompanied by dactylitis, changes in the nail, and a positive serologic reaction.

PSORIASIS

When psoriatic lesions of the feet are part of a generalized eruption the diagnosis is simple. However, psoriasis may be confined to the soles or the nails for many years or a lifetime. The soles are dry, scaly and often fissured. There rarely is involvement of the interdigital webs as in fungous infections. The eruption is more diffuse than in the occupational keratodermas and usually starts in childhood or later life in contradistinction to the congenital keratodermas. Patients with diffuse papulosquamous syphilids generally show other signs of syphilis and have a positive serologic reaction. Squamous eczemas usually can be differentiated by biopsy. The nails are thickened, irregularly laminated, brittle and yellowish white. Psoriasis can be differentiated from fungous infections by direct and cultural examinations of scrapings. Arthropathic psoriasis is the name given to the association of polyarthritis and widespread psoriasis of which the involvement of the feet is only a part. Pustular psoriasis on the feet as elsewhere is a more acute phase of psoriasis vulgaris. Certain lesions of pustular psoriasis often subside or become typical lesions of psoriasis vulgaris; also the reverse is often seen. Psoriasis may involve the feet as part of a generalized exfoliative dermatitis and must be differentiated from exfoliations due to arsenical or other drugs, the lymphoblastomas, exfoliative seborrheic dermatitis and lichen planus. This usually can be done by means of a careful history, examination and biopsy. The cause of psoriasis is unknown, and the recent clinical investigations seem to have thrown little light on it.

The treatment of psoriasis has made little advance in many years. Innumerable remedies have been publicized in glowing reports only to be found wanting when checked by less enthusiastic investigators. I have conducted special psoriatic clinics at the Ancker Hospital and the University Hospitals for several years and have observed over 500 psoriatic patients. All the newer remedies and methods of treatment brought to my attention have been tried over long periods. Almost all remedies will help a small percentage of psoriatic patients, but no remedy will benefit all or even a sizable percentage. It is also interesting to note that in my experience most remedies will not take care of recurrences satisfactorily no matter how effective they were the first time. To my mind the Goeckerman tar and ultraviolet ray treatment for hospital patients and the usual topical applications for ambulant patients are still the most satisfactory. It is well to warn that repeated roentgen therapy to the soles is harmful and probably should never be used.

Since my last report a number of remedies have been used because of their reported successful effect on psoriasis. Soybean lecithin given in capsules and in cookies, eosin used locally in lotions and ointments, parathyroid injection subcutaneously, Honduran sarsaparilla in tablet form by mouth, and pancreatin in tablet form given by mouth were all tried over a period of months, and they did not cure psoriasis. Of the aforementioned remedies pancreatin in 5 grain (0.32 Gm.) tablets given four times daily by mouth combined with a scaling ointment seemed to be the most satisfactory.

DISTURBANCES OF THE SWEAT GLANDS

Hyperhidrosis is often accompanied by a certain amount of inflammatory change in the skin. It often paves the way for more serious conditions as well as aggravating existing inflammatory diseases. Hyperhidrosis may be caused by a disease of the thyroid gland, obesity, tuberculosis, chronic alcoholism, emotional disturbances and many other diseases. The cause should be removed when possible. Careful drying of the feet, frequent bathing, avoiding wool socks, changing shoes and socks daily, allowing shoes to dry thoroughly before wearing, avoiding thick soled or rubber soled shoes, wearing perforated shoes, using a harmless dusting powder in the footwear and applying an aqueous solution of 15 per cent aluminum chloride are helpful. Here again repeated roentgen therapy should be used cautiously.

Bromidrosis can be described as hyperhidrosis with an odor. The causes and the treatment of the two are essentially the same.

Dyshidrosis is an acute or subacute inflammatory condition occurring on the hands and the feet. The lesions occur on the soles and the interdigital webs. The eruption appears as deep seated solitary vesicles which itch intensely. The lesions later rupture and scale or they may coalesce and form clusters. The degree and the signs of inflammation vary. The eruption often becomes pustular, and it may be a forerunner of fungous infections or pyodermas. Dyshidrosis is less frequent and less severe on the feet. It has a tendency to recur repeatedly. In my experience the eruption frequently follows periods of overwork, nervous exhaustion or emotional disturbance and is often accompanied by hyperhidrosis. Treatment is directed toward correction of the general disturbance when one exists, use of the same drying measures as mentioned for hyperhidrosis and use of local applications. The use of 3 to 5 per cent salicylic acid and 3 to 5 per cent benzoic acid in paste of zinc oxide often gives satisfactory results.

LICHEN SIMPLEX CHRONICUS

Lichen simplex chronicus occurs on the dorsa of the feet and at the instep from ill fitted shoes and other causes. It is not always localized neurodermatitis. In some cases it is due to purely mechanical irritation by a foreign object on the skin and will disappear with little or no treatment when the offending object is removed. I have observed this several times when trusses were removed following operation for hernias. Lichen simplex chronicus is a circumscribed patch of chronic inflammation characterized by thickening of the skin, a dull red color, accentuation of the lines of cleavage and presence of excoriations. If the cause can be removed the disease often responds to fractional doses of roentgen rays plus a local application of 1 to 5 per cent crude coal tar in paste of zinc oxide. A recent favorite application of mine obtained indirectly from Dr. J. B. Shelmire of Dallas, Texas, is salicylic acid 0.5 Gm., mercuric salicylate 1 Gm., oil of eucalyptus 1 Gm., bismuth subnitrate 2 Gm., hydrous wool fat 15 Gm. and white petrolatum 15 Gm.

PERSISTENT ERYTHEMA OF PALMS AND SOLES

Persistent erythema of the palms and soles is much more common than is generally known. Little attention is paid to the eruption because it is often asymptomatic. It usually occurs over the points of pressure on the feet and remains for months or years. Some-

times there is an accompanying hyperhidrosis, and at times the feet itch or burn. There are constantly patients with this eruption in the wards for tuberculosis at the Ancker Hospital. I have seen as many as 10 of 150 tuberculous patients with it. The significance of the erythema was never determined but it was not seen in patients who did not have tuberculosis. Several biopsies were made and no abnormalities were noted. Fractional doses of roentgen rays, drying and scaling ointments and lotions, as well as other applications, did not affect the eruption. A recent article by Nelson¹ may be a step further in the foregoing description and might show the different findings in ambulant patients in his group and bed patients in mine. However, the uniform favorable response of Nelson's patients to treatment leads me to believe that we are not discussing the same disease.

RADIODERMATITIS

Radiodermatitis is all too common on the feet. It generally follows treatment for one of the common recurrent cutaneous eruptions, such as psoriasis and fungous infections, or treatment for plantar warts. Chronic radiodermatitis is usually found on the feet, and it appears in the form of atrophy, hyperpigmentation or depigmentation associated with telangiectasia. This is particularly dangerous on the feet because of the constant trauma and possible development of cancer. When radiodermatitis is present, the feet need especially good care and careful observation at regular intervals. The possibility of cancer should always be kept in mind when the slightest roughening of the surface or ulceration appears. Cancers in radiodermatitis in this location are usually intensely malignant and require immediate attention if cure is to be had.

URTICARIA

The feet may be the only site of urticaria. The eruptions usually occur on the soles and itch annoyingly. The eruption may be caused by any of the many recognized causes, but often there is a particular type spoken of by the French as "fatigue urticaria." At the time of emotional stress or nervous exhaustion the feet will develop urticarial lesions and itch intensely. This continues until the emotional wrong has been righted, in spite of the use of the usual helpful medicaments, such as epinephrine or ephedrine.

GRANULOMA ANNULARE

Granuloma annulare often occurs about the ankles and on the dorsa of the feet. The lesions consist of deeply seated papules which are elevated, firm, vary from the color of normal skin to bluish red and generally form a ring. There are seldom more than one or two ringed lesions on a foot. The lesions usually develop slowly and persist for months or years. They may involute partially and leave single papules or segments of the ring. They are usually comparatively painless. Opinion is divided as to whether the eruption is of tuberculous origin. The disease may be differentiated from erythema elevatum diutinum, erythema multiforme, necrobiosis lipoidica diabetorum, annular sarcoid and rheumatic nodules. Solidified carbon dioxide and radiotherapy are sometimes used satisfactorily. Occasionally a lesion will disappear following biopsy, but often any treatment is ineffective. Granuloma annulare generally involutes without sequelae.

ACRODERMATITIS PERSTANS

Acrodermatitis perstans is a comparatively rare disease of the skin of the feet. It is a chronic infectious dermatitis which usually begins in the region of the nail and spreads slowly from that point. The initial lesions are vesicular or pustular. Later the nails are thickened and may be destroyed. The pustules recur and rupture, and the involved part is covered with crusts. The hands are more commonly the site, but the disease may involve all parts of the skin and mucous membranes. Acrodermatitis perstans is confused with infectious eczematoid dermatitis and pustular psoriasis. Local antiseptic applications are used but often are of little value.

PUSTULAR BACTERID

Pustular bacterids are described by several authors, but I have never seen a case with all the classic findings, so have never made such a diagnosis. The eruption is discussed in detail by Andrews.² The following lines are direct quotations from his book: "The disease usually begins on the midportions of the soles, the characteristic lesions are pustules, the histology is distinctive and the distinguishing facts concerning pustular bacterids are (1) the presence of skin lesions that have a proved relationship to a focus of infection, sometimes accompanied by leukocytosis; (2) positive allergic skin reactions to streptococcus and staphylococcus, (3) consistently sterile cultures from skin lesions, (4) cure by removal of the focus of infection and (5) uniform histopathology similar to that of trichophytid. The treatment of pustular bacterid is chiefly the problem of eliminating all foci of infection. Locally, wet dressings of solution of aluminum acetate diluted 1:4 give the best results."

AINHUM

Ainhum is a rare disease seen chiefly among Negroes. It affects any of the digits but most frequently the little toe. A shallow groove is formed on the digitoplantar web, which spreads and encircles the digit. This constricting fibrous ring tightens and in time amputates the toe. In early stages the digit can be saved by severing the constricting ring.

INFLAMMATORY DISORDERS OF THE SKIN OF THE FEET CONSTITUTING PART OF A DISSEMINATED ERUPTION

Erythema multiforme is commonly seen on the dorsa of the feet as well as on the backs of the hands and on mucous membranes. It is a disease of multiple causes, among which are drugs and allergens. When the cause is removed the disease disappears promptly, but in the as yet idiopathic group small doses of neoarsphenamine, 0.3 Gm. given every three to five days, are often of distinct value.

Pellagra shows cutaneous as well as gastrointestinal and nervous system signs. The skin of the feet is less severely and less often involved than that of the hands, face and neck. When dermatitis occurs it appears as an erythema on the dorsa of the feet and about the ankles. This is followed by edema, hyperpigmentation and desquamation in the late stages, which results in dry, parchment-like hyperpigmented skin. Vitamin B complex combined with a diet rich in pellagra preventive foods is specific if the illness is not so far advanced that the patient cannot take the treatment. A lubricating cream makes the skin more comfortable.

The soles are frequently the sites of scabetic lesions in babies and small children. This fact is often over-

1. Nelson, L. M.: Symmetric Lividity of the Soles, Arch. Dermat. & Syph. 47: 822-825 (June) 1943.

2. Andrews, G. C.: Diseases of the Skin, ed. 2, Philadelphia, W. B. Saunders Company, 1938.

looked and an error in diagnosis made because the lesions are thought to be out of place. Scabies is one of the most perplexing cutaneous problems of the war. British literature since the war shows a huge increase in the number of articles on this disease. Many new and ingenious treatments have been tried. The overnight cures for scabies are generally unsatisfactory. Benzyl benzoate has proved most satisfactory in the British army and among English civilians during the war. It was given a fair trial at the Ancker Hospital and found less satisfactory than the compound ointment of sulfur which had been used for many years.

The feet are involved in many drug eruptions. They are affected in the exfoliative dermatitis caused by arsenic compounds, gold compounds and the barbiturates as well as in the erythema, urticaria and exanthems produced by acetophenetidin, quinine and other drugs; also in the pustular eruptions following the use of iodides and bromides.

Fixed drug eruptions may occur on the feet. These are caused chiefly by phenolphthalein, arsenic compounds, gold compounds and the barbiturates. The eruption appears as solitary or multiple patches of erythema or inflammation shortly after the drugs are taken. The lesions subside after each dose unless the drug is taken continuously. There is a distinct flare-up when the drug is taken again. As a rule each recurrence is more pronounced unless the dose is greatly reduced. Recurrences take place in the same spots, and new lesions appear as time goes on. The older lesions remain as brown pigmented patches long after the causative drug has been stopped, but the gross inflammatory signs disappear promptly when the drug is withdrawn.

Lichen planus is seen about the ankles, soles and dorsa of the feet. Here as elsewhere it is one of the most refractory diseases of the skin to treat. Fractional doses of superficial roentgen rays accompanied by intramuscular injections of $\frac{1}{6}$ grain (0.011 Gm.) of mercuric succinimide at weekly intervals are among the more helpful remedies.

Changes from erythema to gangrene can occur in several systemic diseases such as diabetes, syringomyelia and other diseases of the spinal cord. Ulcers occur on the feet in sickle cell anemia. No attempt will be made to discuss these changes here, but it should always be kept in mind that if the cause of an inflammatory condition of the feet is not specifically determined a general physical and laboratory examination must be done.

Certain dermatoses which are comparatively common elsewhere, such as dermatitis factitia and herpes simplex, can occur on the feet.

Some uncommon or rare diseases, such as necrobiosis lipoidica diabetorum, creeping eruption, schistosomal infections and the lymphoblastomas, may be represented by lesions on the feet.

Epidermolysis bullosa is a rare cutaneous disease in which vesicles or bullae are produced by slight trauma on the feet as well as other parts of the body.

Eczema of the feet is usually part of a local or generalized contact dermatitis or part of atopic eczema. The lesions vary from vesicles to scaling plaques accompanied by deep painful fissures. A discussion of eczema to be of any value would be too long for this paper.

Erythredema polyneuropathy (acrodynia) is manifested in swollen, pink feet, the skin of which later desquamates, and may appear as a vesicular dermatitis.

The exanthems scarlet fever, smallpox, chickenpox and vaccinia produce familiar lesions on the feet.

The chronic infectious granulomas syphilis, tuberculosis and leprosy all can appear on the feet in their many forms. Tuberculosis is probably limited to papulonecrotic tuberculids and the primary complex on the skin of the feet.

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CUTANEOUS MANIFESTATIONS OF THE CIRCULATORY DISORDERS OF THE FOOT

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The most important cutaneous manifestations that occur on the foot in association with circulatory disorders are those which occur with peripheral vascular disease. In the past two decades the study of peripheral vascular disease has made great progress, and many physicians and clinics devote most of their time to the study of such diseases. The sources for this dissertation are several: standard textbooks on dermatology, books on peripheral vascular disease, other medical literature and the personal experience of the author and his colleagues who have a special interest in this phase of medicine. Specific statements in the literature or authorities will not be cited, and no attempt will be made to cover this vast field completely.

ARTERIOSCLEROSIS OBLITERANS

While arteriosclerosis occurs in both sexes, symptoms and signs of obliteration of arteries in the lower extremities occur almost always in men past the age of 55. The commonest symptom arises from intermittent claudication and consists of pain on exercise which disappears on resting. Pain during rest is not usually severe but there may be other sensations in the foot, such as coldness, paresthesia, "pins and needles" sensation and formication.

Local signs of vascular deficiency on the skin of the feet are the rule. Failure of the feet to sweat and loss of lanugo hairs over the toes are early signs of occlusive vascular disease. The nails may be atrophic and brittle, or they may be thickened and horny; corns and calluses may develop or may become much thickened.

Most important for diagnosis is the condition of the minute vessels of the skin as evidenced by the color of the skin. A purple-red color on dependence is the most important sign of arterial circulatory deficiency, which may indicate a compensatory dilatation of superficial vessels to make up for partial closure of the large vessels. The redness consists of a flush involving the sole of the foot, extending up the sides to some degree, and involving the dorsa of the toes and adjacent parts of the foot.

Blanching of the foot on elevation to the perpendicular is also present. The rapidity with which this blanching occurs is often an indication of the severity of the arterial deficiency. Return of normal pinkness as the foot is depressed to the horizontal also may indicate the degree of insufficiency; the more nearly horizontal the leg is when pinkness returns the greater the insufficiency. A

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similar and probably more accurate estimation of arterial deficiency can be made by having the patient alternately flex and extend the toes; rapid blanching with slow return of the normal pink color is present in occlusive vascular disease.

If the deficiency has attained the level of producing clinical symptoms, then the superficial pulses of the dorsalis pedis and posterior tibial arteries are usually absent or much decreased. At room temperature there is decrease in the surface temperature of the affected foot. X-ray examination using soft tissue technic may show calcification of arteries, but negative findings do not exclude occlusive disease, and presence of calcified vessels does not necessarily indicate vascular deficiency. Oscillometric readings give reliable information as to the status of the arterial supply. The equipment does not cost much more than a good sphygmomanometer, and the method of use is now such that the average physician can employ it effectively. Other tests, suitable only for those specially interested in peripheral vascular disease, have been devised to determine the degree and the amount of vascular closure.

The foot with deficient arterial circulation is much more severely affected by slight trauma or infection than the normal foot, so that apparently minor conditions may be extremely serious. Minor blisters, abrasions, ingrowing nails, corns, calluses, fungous infections and other simple disorders may be the source of intractable infection or even gangrene. All these conditions should be prevented or if present should be treated conservatively and carefully.

Gangrene is the most serious event which can occur in the foot with deficient arterial circulation. It may start as a dry gangrene involving the distal parts, most commonly the tips of the toes, particularly the great toe, but be progressive even to involving much of the foot.

Moist gangrene is usually the result of infection of a preceding lesion, such as an ingrowing toe nail, a blister, a corn or a callus. It is often preceded by more intense vascular phenomena plus the signs of inflammation, and it spreads more rapidly than the dry type. Ulcers of the mal perforans type with much destruction of the deeper tissue are apt to occur on the sole, particularly near calluses. The ulcer externally may be evidenced only by a fissure or a small granulation, while x-ray examination may show massive destruction of bone. In patients who are confined to bed decubitus ulcers on the heels are common unless precautions are taken to avoid them.

The older person with diabetes is prone to sclerosis of the arteries and subsequent damage to the foot which is in no way different from arteriosclerosis obliterans. In the diabetic patient the conditions are apt to be more serious.

THROMBOANGIITIS OBLITERANS

Thromboangiitis obliterans is an obliterative arterial disease of unknown cause in which there are often superficial migratory phlebitis and vasospastic phenomena associated with the inflammatory thrombosis. It occurs at ages from 25 to 45, almost exclusively in men, and affects predominantly the Jewish race. Pain from intermittent claudication is common and severe. Other types of pain also occur with exercise, and pain during rest is often present and may be severe.

Signs of vascular disturbance on the feet are more pronounced than in arteriosclerosis. There is rubor which may be very intense on dependence, extending onto the top of the foot, the toes and the sides. Ischemia on elevation also occurs. In some patients there is vaso-spasm followed by dilatation and cyanosis on exposure

to cold. On examination there is usually a decrease or an absence of pulse in the superficial arteries of the foot and frequently in the arteries at the wrist. The surface temperature is reduced. Trophic disturbances of the skin, disturbances of the nails, calluses, blisters and other findings similar to those discussed in arteriosclerosis obliterans are usually present. Gangrene is common in the later stages and usually involves the toes and follows one of the aforementioned conditions, occurring particularly after the formation of a blister or about a corn or an ingrowing nail.

The treatment of arterial occlusive diseases of the extremities has made great progress in the past several years. Prophylactic care of the feet in the early stages may prevent one of the more serious sequelae. Well fitting stockings of cotton or thin wool and properly fitted shoes of soft leather are the first essentials. The feet may be washed as often as required but not more than once a day with a mild soap and warm water. They should be dried gently and carefully. If the skin is dry a vegetable cooking oil may be rubbed into it. Nails should be trimmed with care not to injure the skin and should be cut straight across. Ingrowing nails should be treated by a physician. Corns and calluses should be treated with respect, and salicylic acid plasters should not be used. Any blister, bruise, cut or injury should be treated carefully and conservatively. Exposure of the feet to cold should be avoided, as should also all constrictions of the legs, such as garters. Excessive standing, sitting with legs crossed and exercise which causes pain should be eliminated. External heat from lights or hot water bags had best be avoided, as it may cause trouble by increasing the metabolism of the part without adding to the blood supply. Bed stockings may be used to help cold feet. Midday rest with feet slightly elevated or mild exercises of the type described in the following paragraph are often helpful in aiding the circulation.

More active treatment may be carried out if the symptoms warrant it or if a minor complication is anticipated. Rest in a horizontal position requires less peripheral circulation and is helpful. Vascular exercises done as follows in each of three positions will aid in establishing collateral circulation: The feet are plantar flexed, then dorsiflexed, the toes are turned inward and then outward; then the toes are spread widely, then closed. This exercise is carried out (1) with the feet on a board at an angle of 30 degrees or less above the horizontal for two minutes, (2) with the feet hanging over the edge of the bed for three minutes and (3) with the feet horizontal and covered with bed clothes for five minutes. Up to three sessions a day of such exercises may be carried out.

More or less elaborate apparatus can also be used. Among them is one by which alternate suction and pressure can be exerted on the foot enclosed in a glass boot for periods of an hour or more and a total of one hundred hours. This procedure under the designation passive vascular exercise was popular several years ago. Periodic venous occlusion by means of an inflatable cuff similar to that used for taking blood pressure has also been used, but the apparatus is not simple. Passive exercise produced by means of an oscillating bed is one of the best methods, but the bed is expensive.

Heat used with caution and applied usually to adjacent areas rather than to the affected leg and foot is useful. It may be obtained by hot sitz baths, short wave diathermy to the pelvic region or the application of heat to an uninvolved leg. Heat over 94 F. is probably harmful to an affected leg.

Drugs which act as vasodilators may be helpful. Among these are alcohol, sodium nitrite or erythrol tetranitrate, papaverine hydrochloride intravenously several times a day and drugs of the xanthine type.

Elevating the temperature by means of typhoid vaccine in doses of 25 million killed organisms given intravenously at intervals of several days to a week or more may improve the circulation. The intravenous injection of 2 to 5 per cent sodium chloride solution in amounts of 250 cc. three times a week for months has been used in the therapy of thromboangiitis obliterans. Iontophoresis with mecholyl chloride or histamine, which produce vasodilatation, has also been used.

In the presence of gangrene amputation will usually be necessary, and it may be difficult to decide the level at which it should be performed. Amputation of digits or of a part of the foot is apt to require reamputation. Recently refrigeration of the extremity has controlled infection and made a most satisfactory anesthesia for amputation; it allows the surgeon to pick the optimal time for amputation.

ACROCYANOSIS, CHILBLAIN CIRCULATION, PERNIO, ERYTHROCYANOSIS CRURUM PUELLARIS

The disorders thus grouped, probably essentially the same except for the degree of involvement, have in common mottled cyanosis of the extremities, lowering of the surface temperature, aggravation of symptoms during cold weather and susceptibility to certain more definite clinical syndromes. Disorders of this type are much more common in women and are particularly evident in adolescent girls. The purple-red mottling is caused by stasis of blood and loss of oxygen from the blood in the capillaries and the venules of the skin. The pattern is caused by the arborizations of the capillary supply of the skin. There is probably a large element of vasospasm in the cause of the condition but in the more advanced or complicated forms there is added vascular inflammation with stasis, giving rise to indefinite infiltrated plaques, superficial ulceration and other lesions.

The diagnosis of this condition is not difficult. The feet are cold and clammy with cold perspiration, and the skin may be macerated from the sweating. The purple mottling with occasional white areas, aggravated by cold, is distinctive. The legs, hands, arms, nose and ears are usually the sites of similar circulatory changes.

Patients with these disorders are reputed to be more susceptible to other conditions, such as erythema induratum, lupus pernio, other inflammatory lesions of the legs occurring in winter, neurocirculatory asthenia, chronic rheumatoid arthritis and probably some forms of mental disease. Whether livedo reticularis should be considered as an advanced or severe form of one of the aforementioned disorders or a separate condition is difficult to say. In this disorder the purplish mottling follows a larger pattern, areas of livedo are more prominent and small superficial dry gangrenous ulcers of the legs and toes may occur.

Chilblains, or pernioles, are painful or burning indurated reddish purple swellings that on the feet may be located over the toes, on the plantar surfaces, especially the heels, but not on the insteps. They may occur in normal persons who are exposed to damp cold over long periods or they may occur as a result of frostbite. They occur often in patients with acrocyanosis even though exposure to cold is minimal. The lesions usually disappear in summer and return in the fall with the onset of cold weather. They may become semipermanent in some, particularly if there is a background of infection

such as tuberculosis. Similar lesions occur on the hands, the nose and the ears in the same type of person.

The treatment of the disorders grouped as acrocyanosis consists chiefly in the avoiding of exposure to cold, particularly damp cold. Warm stockings and loose fitting soft shoes should be worn. Excessive perspiration may be guarded against somewhat by soaking the feet in warm potassium permanganate solution of a strength of 1:1,500. Aluminum chloride in a concentration up to 25 per cent painted on the sweating areas one night a week frequently decreases the perspiration considerably. X-rays should not be used, as damage to the skin occurs before permanent decrease of sweating does. In the severe forms with excessive cyanosis, areas of ulceration or other complications of a vasospastic nature, lumbar sympathectomy may be necessary.

RAYNAUD'S SYNDROME

Raynaud's syndrome is a vasospastic disorder without vascular occlusion characterized by vasomotor phenomena of the extremities, superficial dry gangrene and trophic disturbances, with fairly characteristic findings in the capillary bed. Over 95 per cent of the patients are women, mostly in the age group of 17 to 35.

The vasomotor signs are the essential feature of the syndrome. Rather suddenly, precipitated by cold or emotional disturbances, the tips of the digits become pale and exsanguinated. In the beginning of the attack the spasm of the vessels is intermittent and can be seen best in the finger nails, where there will be alternate waves of whiteness and pinkness of the nails, but when the digits become bloodless the nails are similarly affected. The phase of local syncope is followed after a period by a cyanotic phase that appears slowly and lasts longer. The digit affected becomes gradually bluish, then purplish and finally blue-black. After some time the normal color returns. If the condition is on the feet not all the toes may be affected, and one digit may be in the phase of syncope while others may be cyanotic. There are subjective sensations which vary from itching, burning and other minor sensations to excruciating pain during an attack. Usually the hands are more severely affected than the feet.

The phase of trophic disturbances does not appear in all cases. It affects the extremity of the involved digit. After a severe attack of syncope or repeated minor attacks a small phlyctenular blister appears on the most distal part of the digit; this is followed by a small painful necrotic ulcer, which is usually dry and heals slowly, leaving a slight scar. After repeated episodes of superficial gangrene there is a loss of substance of the tip which may involve the bone of the terminal phalanx. Changes in the nail, both hypertrophic and atrophic, are the rule, and the nail grows over the end of the affected digit. The skin may be atrophic, thin and shiny or in a few it may become infiltrated and sclerodermatous. Extensive gangrene is uncommon but may occur.

The surface temperature of the extremity is lowered, and cold clammy perspiration is usually present. The superficial pulses are normal, but microscopic study of the capillaries of the nail fold may demonstrate a spasm of the vessels fairly diagnostic of Raynaud's syndrome.

Acrosclerosis (sclerodactylia, scleroderma with sclerodactylia) has been definitely separated from the group of diffuse sclerodermas as a different type of cutaneous sclerosis. In this disorder there are for a long time signs of acroasphyxia of the Raynaud type on the extremities. As in Raynaud's syndrome the hands are

worse and more often affected than the feet. Following the vascular symptoms there is sclerosis of the skin and underlying tissues involving first the digits and then gradually the feet and legs, the hands and the arms. The face, the upper part of the chest and the back are also involved in the sclerotic process. Atrophic changes, loss of distal phalanges, changes in the nails, necrosis and occasionally local calcification occur. Acrosclerosis cannot always be differentiated from Raynaud's syndrome with secondary sclerosis of the cutaneous tissues.

Treatment of Raynaud's disease and acrosclerosis is unsatisfactory. Avoidance of exposure to cold is most important, and it may be advisable for the patient to move to an equable warm dry climate. Vasodilatation obtained by means of drugs such as nitrites or papaverine hydrochloride may help. External heat of moderate degrees and light massage may aid. Iontophoresis of mecholyl chloride has been suggested as one of the best therapies. Lumbar sympathectomy offers a possibility of relief that may be permanent. It should be done before permanent damage has taken place. In late stages of Raynaud's disease and in acrosclerosis it is of little value.

ERYTHROMELALGIA

Erythromelalgia is a disorder of the extremities characterized by redness, increased surface temperature and pain. It involves the feet more often and more severely than the hands. An attack is provoked when the surface temperature reaches a critical level, though there are other factors, such as dependence, which also have an effect. A burning, sticking, prickling type of pain is constantly present. The surface temperature is elevated and the foot is red because of the vasodilatation, which is of the active type. The more distal areas of the foot, such as the toes or the heel, are most involved and there may be swelling, but only rarely are there trophic changes.

On examination the increased heat and redness are evident and the pulses are full and bounding. These findings serve to distinguish this disorder from occlusive arterial disease of Raynaud's syndrome. Owing to redness, swelling and pain in attacks, gout must be first considered in differential diagnosis. Treatment is not satisfactory. Heat and dependence should be avoided. Acetylsalicylic acid may control the symptoms.

IMMERSION FOOT, TRENCH FOOT, SHELTER FOOT

Prolonged refrigeration at temperatures near freezing and dependence of the feet, which are frequently wet and encased in tight coverings, give rise to serious vasomotor damage in the foot. In this war the condition occurs mostly in those torpedoed in the north Atlantic; in the first world war it occurred in men standing in damp trenches—circumstances which have given the aforementioned popular names to the syndrome.

When the affected person is taken from the lifeboat the feet are cold, swollen and white, with scattered cyanotic areas. The feet are numb and heavy and are anesthetic to pain, touch and changes of temperature. If the feet are allowed to "thaw," there is rapid development of swelling and the feet become red and hot. The peripheral parts become swollen and livid, and, as the condition progresses, blisters, filled either with clear or bloody fluid, and gangrene may be imminent. In severe involvements gangrene occurs soon after thawing, but the minor ones may show only slight redness, edema and slight sensory changes. Because of damage to the sympathetic and other nerves, there is no sweating of the affected feet, and this may account for the redness, heat and rapid swelling that occur with quick thawing.

The greatest progress in the treatment of this condition has been the demonstration that surrounding the limb with ice or keeping it cold by other methods will prevent serious damage except in severe types. In the first aid stage care in removing the patient to a hospital and avoidance of heat and dependence of the foot are extremely important. Refrigeration of the elevated leg relieves the pain and prevents swelling and blister formation. It may need to be kept up for a week or longer.

Following recovery from the acute phases pain, redness, edema and other manifestations of a circulatory disturbance often persist, and troublesome neuritis often occurs.

Severe or mild repeated frostbite of civilians is in essence no different from immersion foot. In northern climates the layman has for years carried out refrigeration for minor frostbite. It is interesting to see that this treatment is equally effective in severe frostbite.

Late changes following frostbite, particularly such severe ones as gangrene, may not be caused by the freezing itself but may be due to the activation of arteriosclerotic occlusive disease or thromboangiitis obliterans in a person with subclinical manifestations. Intolerance of cold, chilblains and mild vasomotor changes of the feet are common after-effects of freezing and persist for years.

VASCULAR ANOMALIES

Port wine or capillary angioma occurs on the foot, usually as part of an extensive port wine mark. The involved skin, apparently normal except for the purplish color and possibly slightly increased surface temperature, is easy to recognize. Occasionally angioma of this type is part of an extensive deep vascular nevus. No treatment of capillary angioma is effective.

Spider nevus is found on the foot, where it may be multiple. The central capillary with radial spokes is characteristic. Fulguration or closure of the central vessel with a galvanic current is usually successful.

Small cavernous angiomas similar to the mulberry marks found so commonly elsewhere also occur on the foot and toes. They appear as pea to quarter size (24 mm.) localized vascular lesions. The small ones are successfully treated with solid carbon dioxide; the larger ones require irradiation with x-rays or radium.

A cavernous angioma with or without port wine elements may be of large size on an extremity. Often such an angioma allows short circuiting of the arterial blood to the veins. In such cases there are frequently overgrowth of the extremity, increased surface temperature, arterial blood in the veins, which may pulsate, and even cardiac signs of the shunting of the blood. Cirroid aneurysm is somewhat of this type. A large angioma may require operative removal or even amputation if arteriovenous communications are numerous.

Lymphangioma may be of the circumscribed type which presents itself as a localized area of pseudovesicle formation, frequently in an elevated verruca-like area. If the skin over the lymphangioma is broken, lymph may ooze for a long time. Local destructive procedures, such as biterminal diathermy or cautery, give good results.

Diffuse lymphangiomatosis of the leg and foot is not common but is serious because of the increase in size of the extremity and the proliferation of interstitial tissue giving rise to deformity. Local gigantism may also be present here. Treatment is not satisfactory.

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FUNGOUS INFECTIONS OF THE FOOT

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The modern habit of wearing shoes that encase the foot has endowed the surface of the foot with the warmth and moisture that make it an excellent culture medium for the growth of fungi. Pathogenic fungi have no doubt always made the foot a site for various cutaneous infections, but it is only in recent years that such infections have attracted dermatologic interest. Ormsby and Mitchell¹ in 1916 made the first comprehensive report in the United States of a large series of cases in which fungi were demonstrated microscopically. Since then fungous infections of the foot have increased to become among the most common cutaneous disorders. Direct microscopic examination of scrapings and the use of cultural methods for demonstrating the presence of fungi have made it possible to recognize many cases that might otherwise have been misplaced under some other diagnosis. Unquestionably, however, there must in addition have been a tremendous increase in the actual incidence of cases. The mobilization of millions of men incident to World War I inadvertently distributed many cases of fungous infections among the various camps and training centers. These cases acted as reservoirs from which the infections spread to great numbers of previously uninfected feet. Demobilization was followed by the dissemination of pathogenic fungi by the men returning home, and fungous infections of the foot have remained endemic in all parts of the United States since that time.

THE SUPERFICIAL MYCOSES

Dermatophytosis.—The most common fungous infection of the foot is that caused by the many species of ringworm fungus and described under many names, such as tinea, eczematoid ringworm, epidermophytosis, epidermonycosis and trichophytosis, all of which may comprehensively be designated by the term dermatophytosis.

Many genera and species of fungi may produce dermatophytosis. Weidman² in 1926 listed the geographic distribution of cases and showed that different fungi predominate as the etiologic agents in different parts of the world. According to Lewis and Hopper³ *Trichophyton gypsum* and *Trichophyton purpureum* are the most frequently reported causative fungi at present, while *Epidermophyton inguinale* and other fungi are found less often. Not only do fungi vary in their geographic distribution from year to year, but they may also show great differences in virulence at various times.

The disease may appear at any age, but it is seen relatively seldom in children. Men have been affected more often than women, but this is probably the result of factors which may operate less often in the future. Because of mobilization in army camps and greater tendency to visit gymnasiums and swimming pools, men more often than women have in the past been exposed

to infection. Woman's increasing role in industrial activities and in the prosecution of the war should do much, however, to afford her an equal opportunity for such exposure. It remains for the future to prove whether men are actually more susceptible to infection.

The infection may appear on a previously healthy skin, either with or without a preceding injury. Contact with material contaminated with fungi, such as socks, shoe leather, bath mats or wet floors, often precedes the infection. A certain predisposition to the disease, however, must play an important role, for, as White⁴ pointed out and as has recently been shown in a statistical study by Sulzberger and his co-workers,⁵ conjugal and familial transmission of the infection is uncommon. In most cases the patient carries his own dormant reservoir of fungi somewhere on the foot, and when his general resistance is lowered or the local conditions on the foot become optimum for the growth of fungi an active infection may flare up. Cases of dermatophytosis of the foot are seen through all seasons of the year but in this climate they tend to increase in number and severity in the summer.

Dermatophytosis of the foot may present a variety of clinical pictures. Most of these may be included in the classification of intertriginous, vesicular and hyperkeratotic groups. In most patients in whom the infection is minimal it consists of a macerated scaling between the toes, especially in the interspace between the fourth and fifth toes. With increased activity of the infection the scaling may spread to involve all the interspaces, although the space between the large and the second toe is seldom affected. There may be increased moisture, the surface often becomes sodden and erythematous, and at times fissures may appear in the interspaces and on the basal plantar surfaces of the toes, especially that of the fifth toe. Itching is usually present and often severe, while in the presence of fissures pain is an outstanding symptom.

In some cases vesicles appear on the sides or the under surfaces of the toes, and at times there are vesicular patches on the soles, especially on the insteps. Such acute attacks may appear on previously uninfected feet but more often they complicate intertriginous infections which may have been irritated mechanically, as by scratching, by increased perspiration or by overtreatment. The vesicles are usually deeply set and tense, and they often become sufficiently large to make walking difficult. When small the vesicle may dry spontaneously and result in a dry scale which soon exfoliates to leave a slight collaret. In most cases, however, the larger vesicles rupture to release a mucilaginous fluid and to expose a smooth, bright red base. Often the contents of the bulla become purulent and a red inflammatory areola develops. Such lesions do not tend to rupture spontaneously, and the removal of the roof of the bulla exposes a deeply excavated, red, granular multilocular base. At times groups of vesicles may coalesce to form patches of varying size. These patches characteristically have a sharply outlined border which is often serpiginous and which shows an overhanging peripheral scale. The center may become covered by epithelium or it may be the site of fresh vesicular outbreaks. Itching in these conditions is usually severe, and it often leads

The photographs are from the collection of Dr. James Herbert Mitchell.

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4. White, C. J.: Fungous Diseases of the Skin, Arch. Dermat. & Syph. 15: 387 (April) 1927.

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patients to tear the vesicles open or to puncture them, procedures which are sometimes followed by secondary infection. In the intertriginous and the vesicular forms there is a tendency for both feet to be involved, but it is not uncommon for one foot to be severely inflamed while the other may be entirely well or show but a minimal infection.

In the chronic hyperkeratotic type the involvement is usually bilateral and often symmetrical. Any part of the plantar surface may be affected, the involved areas ranging from a small patch on the instep or heel to the entire sole. In such cases the dermatophytosis often begins with vesicles, but eventually there are produced sharply outlined patches in which the horny layer is uniformly thickened, with no tendency to central clearing. The scale is grayish and dry, and it may show variations in thickness even to forming a shell-like coating. At times fissures may occur within these patches and extend deeply into the underlying flesh, producing intense pain. Lewis and his associates⁶ have shown that a specific clinical picture of infection is produced by *T. purpureum*. Vesicles or acute inflammation practically never occur. Usually there are sharply outlined patches involving from a small area to the entire sole. In the cases of



Fig. 1.—Acute vesicular dermatophytosis on the foot.

greater involvement the infection extends up on the sides of the foot and about the heel. The infected skin is dull red, with fine branny scaling and no tendency toward central clearing. Itching is commonly present.

The nails may be infected by any of the ringworm

oi. The infection commonly begins under the free margin of the nail or at the sides as a grayish or dark accumulation of scale and debris which lifts the nail away from the nail bed. Linear streaks of this debris extend posteriorly toward the nail root, and the overlying nail becomes opaque and yellowish, and at times greatly thickened. One or several nails may be affected. In infection by *T. purpureum* the progress of the disease is slow but there is a tendency for the infection to spread gradually to involve all of the nails. The separation of the nail from its bed proceeds backward from the free margin, and the loose part of the nail becomes thin and brittle. Eventually it is shed, exposing an opaque rough surface that is irregularly ridged and that extends to a shrunken proximal stump of the nail. Paronychia is not ordinarily seen in these cases. Infection of the nail may persist long after all other clinical evidence of the disease has disappeared. In this stage the nail may then harbor in a dormant state the fungi from which active dermatophytosis may later develop.

The clinical pictures described in the foregoing paragraphs may be complicated by various developments. Scratching or puncturing the vesicles may be followed by secondary infection, although at times pustules develop without apparent preceding trauma. These pustules are often the portal of entry for bacteria which produce streaks of lymphangitis which may extend upward on the leg and thigh and result in regional lymphadenopathy. At times cellulitis may develop about the pustules, and this may extend to the dorsal surface of the foot and cause great swelling, pain and fever. Not infrequently erysipelas-like patches occur on the dorsal surface of the foot and on the leg, and these are introduced by chills and fever identical with the symptoms that accompany erysipelas on any other parts. This type of lesion has been variously explained as an allergic reaction to the fungus infecting the feet⁷ or as an actual streptococcal infection⁸ in which the portal of entry is often an interdigital fissure resulting from dermatophytosis. Exacerbations in the fungous infection of the feet are often followed by recurrences of these erysipelas-like attacks. Patches of dermatophytosis may appear on areas adjacent to the foot by direct extension or the infection may be implanted on other moist areas such as the groins, the axillas and the region about the anus. Not infrequently, however, eruptions occur on distant parts which are caused by hematogenous transmission of the fungus or its toxins from its original focus on the feet to sites previously sensitized, on which there develops an allergic "id" reaction.⁹ The most common secondary site for the dermatophytid is the hand. There the lesions occur as small vesicles on the sides of the fingers or often as small or large, deep, tense vesicles on the palms. Fungi ordinarily cannot be demonstrated in these secondary vesicles on the hands. Occasionally dermatophytids may be generalized and may take the form of lichenoid lesions, eczematous or psoriasiform patches, erythema multiforme-like lesions or urticaria. Often the development of the "id" reaction is initiated by overtreatment of the original infection on the foot.

The diagnosis of dermatophytosis can generally be made on the appearance of the lesions. Fungi can be demonstrated in most cases by a microscopic examination of the scale or the vesicle fluid prepared with a 10 per cent solution of potassium hydroxide. It has become fashionable to diagnose most dermatoses of the foot as "athlete's foot," and one should always search for and demonstrate the fungus before accepting the diagnosis. Differentiating the fungi by cultural methods is of aid in determining the prognosis of an individual case, for infection by *T. purpureum* is much more resistant to treatment, and it should receive more drastic measures. Diagnostic testing with trichophytin is of little value, for a positive reaction demonstrates merely that an infection has at some time been present. Dermatophytosis must be differentiated from many disorders of the foot. In the acute forms it may be confused with dermatitis due to external irritants such as shoe dyes or at times formaldehyde used prophylactically. The disease may in some cases be simulated by monilia, dyshidrosis, pustular psoriasis, pustular

7. Traub, E. F., and Tolmach, J. A.: An Erysipelas-like Eruption Complicating Dermatophytosis, *J. A. M. A.* **108**: 2187 (June 26) 1937.

8. McGlasson, I. L.: Recurrent Erysipelas of the Legs with Dermatitis of the Feet, *Arch. Dermat. & Syph.* **14**: 679 (Dec.) 1926.

9. Williams, C. M.: The Diagnosis of Some Eruptions on the Hands and Feet, *Arch. Dermat. & Syph.* **5**: 161 (Feb.) 1922.

6. Lewis, G. M.; Montgomery, R. M., and Hopper, M. E.: Cutaneous Manifestations of *Trichophyton Purpureum* (Bang.), *Arch. Dermat. & Syph.* **37**: 823 (May) 1938.

bacterid,¹⁰ streptococcic infection,¹¹ chronic eczema and psoriasis. While the differentiation from these dermatoses can often be made on clinical grounds, the most valuable differential finding in dermatophytosis is the fungus. The hyperkeratotic form may at times resemble tertiary syphilis, but in that infection the lesions are nearly always unilateral and never symmetrical. Onychomycosis may be simulated by the nail changes seen in psoriasis. In the latter, however, there are often diagnostic lesions present on other parts and fungi are never found in the scrapings. To demonstrate the fungus in nails infected with *T. purpureum* it is necessary to scrape the nails quite deeply.

In the prophylaxis of dermatophytosis efforts should be directed chiefly to preventing activation of the dormant foci of infection that are present on most feet. Feet should be bathed often and dried thoroughly, socks should be changed frequently, and shoes must be permitted to dry well after wearing. Dusting powder used regularly between the toes and in the socks helps to absorb the perspiration and to keep the feet dry. To protect against contracting an extraneous infection one should never walk barefooted on damp floors or wear shoes or socks that may have been contaminated with pathogenic fungi. Contaminated socks should be boiled, and shoes should be fumigated with formaldehyde vapor after each wearing.

The many systems of treatment and the great number of drugs recommended indicate that there is no specific cure for dermatophytosis. While it is relatively easy to destroy fungi in the test tube, on the foot it is more important to adapt the treatment to the clinical state of the dermatosis rather than to the particular species of fungus present. In cases of mild intertriginous infection the use of antiseptic dusting powders, such as borated talc with the addition of 2 per cent salicylic acid, or mild tincture of iodine, may be effective. In acute vesicular cases great relief may be obtained by removing the tops of the vesicles with scissors and applying continuous cold wet dressings of a 1:4,000 aqueous solution of potassium permanganate or a 1:16 dilution of solution of aluminum acetate. Such wet dressings tend to allay the inflammation and to reduce the hyperhidrosis which generally accompanies these infections. In cases of severe infection it is advisable to keep the patient off his feet, and in these cases the wet applications are preferable to foot baths which necessitate holding the feet dependent. Instead of using strong antiseptics in such acute conditions, it is best to disregard the fungous cause for the time being and to treat the infection as an acute dermatitis.

When the acuteness of the process has subsided, stronger measures may be introduced. Fissures may be painted with a 5 per cent solution of silver nitrate. Foot baths in a 1:4,000 solution of potassium permanganate may be continued, and in addition keratolytic agents, such as diluted ointment of benzoic and salicylic acid, may be applied. Mild tincture of iodine may be used or any of the dyes that are recommended as fungicidal agents, such as 2 per cent gentian violet solution or Castellani's paint. In cases of the chronic hyperkeratotic form stronger medication is often necessary, but the strength of the drugs used should not be increased more rapidly than the tolerance of the

skin will permit. Ointment of benzoic and salicylic acid to which 1 per cent thymol has been added is a time honored remedy, and ointments of phenylmercuric nitrate (1:1,500), crude coal tar (1 to 5 per cent), anthralin (dihydroxyanthranol) (0.1 per cent to 1 per cent) and chrysarobin (1 to 10 per cent) are often useful. Roentgen rays are in general use in treating the chronic infections, and they form a valuable adjunct in the treatment of dermatophytosis. The use of camphor-phenol mixtures is at times followed by burns, and the benefits to be derived are hardly worth the risk. Biologic therapy with trichophytin has generally proved disappointing.

The treatment of infected nails produces at best but slow improvement. In cases caused by *T. purpureum* the prognosis is nearly hopeless. The various reme-



Fig. 2—Ringworm infection of the nail. The surface of the nail was smooth before it was cut away from the nail bed.

dies used include ointment of benzoic and salicylic acid, 6 per cent salicylic acid and 12 per cent benzoic acid in alcohol, and Castellani's paint. The surface of the nails should be scraped before any medication is applied. Roentgen rays should be used cautiously. Removal of infected nails on the feet is not advised, for the new nails tend to be reinfected.

Moniliasis.—Moniliasis is an infection of the skin caused by a yeastlike fungus, *Monilia albicans*.¹² This fungus is often present normally in the gastrointestinal tract, but when present on the skin it is generally pathogenic. The resistance of the skin to monilial infection is greatly lowered by maceration. Obese persons, in whom intertrigo is common, often suffer from this disease, while profuse sweating or prolonged immersion in water, as in water baths, is frequently

10 Andrews, G. C.; Birkman, F. W., and Kelly, R. J.: Recurrent Pustular Eruptions of the Palms and Soles, *Arch. Dermat. & Syph.* 29: 548 (April) 1934.

11 Mitchell, J. H.: Streptococcic Infection Simulating Ringworm of the Hands and Feet, *J. A. M. A.* 104: 1220 (April 6) 1935.

12 Hopkins, J. G.: Moniliasis and Monilids, *Arch. Dermat. & Syph.* 25: 599 (April) 1932.

followed by moniliasis. This predilection is greatly increased in diabetic patients.

Moniliasis may affect many parts, as in the clinical forms of *erosio* between the fingers, as in *perlèche*, as in intertrigo on the axillas, groins, anal fold or under the breasts, as in vaginitis, as in thrush, or it may become generalized. When the foot is involved, the lesions are often found in the spaces between the toes as shiny red moist patches of intertrigo that are sharply outlined. The patches spread by peripheral extension and are surrounded by many outlying inflamed small macules or vesicopustules. In time there may develop large, circumscribed, bright red, oozing patches that cover much of the dorsal surface of the foot. There is no tendency to central clearing. One or both feet may be involved. Itching may be present, but most patients complain of a burning sen-



Fig. 3.—Monilia intertrigo on the foot.

sation, especially after contact with water. An "id" reaction may develop, especially following overtreatment, and the moniliid may become generalized.

The nails are often affected, either primarily or as a complication of the infection of the skin. An injury such as may occur in manicuring often precedes the infection. One or several nails may develop paronychia with a bolster-like swelling accompanied by acute symptoms of erythema, tenderness and at times throbbing pain. The proximal portion of the nail becomes irregularly roughened and depressed at the site of the infection, and frequently the sides of the nail become darker and thickened. As the nail grows out the pathologic changes move distally as a transverse band. In chronic infection the entire nail becomes involved in time, or it may be shed; the prognosis for the regrowth of a normal nail, however, is good.

The diagnosis of a monilial infection can usually be made on the clinical appearance of the circumscribed, bright red, oozing patches. The intertriginous

form must be differentiated from dermatophytosis, streptococcic dermatitis and dermatitis caused by the use of strong local medication. Monilial paronychia is not very painful, and it does not yield pus on incision as would a pyogenic infection. The most important diagnostic finding, however, is the causative fungus. This cannot always be demonstrated on direct microscopic examination, but cultural methods are generally successful in proving the diagnosis.

In treating moniliasis it is important in every case to rule out the presence of diabetes mellitus. In patients with diabetes strict control of that disease must be accomplished before any improvement in the monilial infection can be produced. Almost specific in the local treatment of monilial infections of the skin and nails is a 1 per cent aqueous solution of gentian violet. Roentgen rays are beneficial, especially in paronychia. Ammoniated mercury ointment (3 to 5 per cent) is often effective. While in some cases cold wet dressings of a solution of potassium permanganate (1:4,000) reduce the inflammation and oozing, good results are more often obtained by keeping the infected parts dry. Soap and water should not be used, and the foot should be dusted frequently with borated talc or with powdered starch.

THE DEEP MYCOSES

Mycetoma.—The only fungus infection involving the deeper tissues that shows a predilection for the foot is mycetoma, or Madura foot. This disease, endemic in India and parts of Africa, is rare in the United States, only about 24 cases having been reported, chiefly from the Southwestern states.¹³ Many fungi have been reported as being the cause of mycetoma,¹⁴ among them *Actinomyces* and *Madurella*. Most cases have been seen in men who worked barefooted on the farm, and the fungus was supposedly introduced into the deeper tissues of the foot through an injury. After an incubation period varying from one month to several years a small red nodule appears at the site of injury, most often on the plantar surface of the foot. The nodules enlarge, soften and break open to discharge a yellowish, blood streaked viscid fluid containing granules. By the color of these granules cases of mycetoma formerly were classified into grayish, red and black varieties, but such a division overlooked the fact that granules of the same color may be produced by different fungi. From each open lesion a sinus penetrates deeply into the foot, and these sinuses do not heal. New nodules appear, enlarge and open, and after many years the foot becomes bulbous and its entire surface covered by bullae and pustules. Each of these includes the opening of a channel that penetrates deeply through soft tissues to the bones, eventually resulting in osteomyelitis. The foot becomes greatly deformed and useless, while the leg becomes atrophic. Pain is generally absent, there is no especial effect on the general health, and the course of the disease is very chronic.

In cases of advanced infection the appearance of the bulbous foot is diagnostic. Earlier in the course of the disease the diagnosis can be made from the discharged granules resembling fish roe and by the microscopic demonstration of the fungus in these granules.

In the early stages treatment with large doses of potassium iodide may be helpful, but in most of the

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14. Gammel, J. A.: *The Etiology of Madurellosis*, Arch. Dermat. & Syph. 15: 241 (March) 1927.

reported cases cure was finally obtained only by amputation of the infected foot.

Sporotrichosis.—Cases of sporotrichosis have been reported from many parts of the world, especially France. In the United States most of the recorded cases have occurred in the region of the Mississippi Valley. *Sporotrichum schenckii* is the fungus most often demonstrated in our cases, and it is widely distributed in the excreta of human and animal carriers and on many plants. The disease affects not only man but horses, mules, dogs and rats.

Infection has been shown in some cases to follow an injury with a thorn¹⁵ through which the fungus was introduced into the skin. Gardeners and farmers are especially prone to contract this disease. In the localized lymphangitic type of sporotrichosis, which is the one most commonly seen here, a lesion develops at the site of injury after an incubation period of about a week. This "sporotrichotic chancre" is an indolent nodule which in most cases ulcerates, and at times it may be indurated and resemble the primary lesion of syphilis. It occurs most often on the finger or the hand, but it has been described also on the foot and other parts. About a week or longer after the appearance of the primary lesion a linear chain of indurated subcutaneous nodules appears along the course of the lymphatics ascending from the site of infection, and the lymph vessels become thickened and cordlike. These nodules enlarge, become attached to the skin and generally ulcerate to discharge a grayish yellow pus. The ulcers sometimes heal slowly but in most cases they persist indefinitely. The regional lymph glands are not enlarged, and there are no constitutional symptoms. Other types of sporotrichosis are the disseminated subcutaneous type which is often seen in France, the disseminated ulcerating type¹⁶ and the systemic type.

The diagnosis is generally made on the appearance of an ulcerating nodule at the site of an injury to the skin followed by the development of a chain of indolent subcutaneous nodules. The disease must be differentiated from other deep fungous infections and from tularemia, tuberculosis, syphilis and pyogenic infections. The diagnosis can be established by demonstrating the sporothrix on culture, by animal inoculation (rat) or by complement fixation and agglutination tests.

The use of potassium iodide in large doses is specific in sporotrichosis, and local roentgen treatment hastens the involution of the lesions.

Blastomycosis.—Blastomycosis may at times involve the foot. The causative fungus in cases seen in the United States is *Blastomyces dermatitidis*.¹⁷ A great majority of the cases have been reported from the Middle West, especially from Chicago. The lesion begins as a small papulopustule, which soon becomes crusted. It enlarges gradually by peripheral extension to produce sharply outlined patches, limited by a rounded or polycyclic border. In a large patch there is a separation of the lesion into definite zones: In the center lies an irregular whitish depressed atrophic area. About this is a wide zone in which the surface is papillomatous and either bathed by a seropurulent

discharge or covered by a thick adherent crust. The border is sharply demarcated, and it slopes abruptly from the warty zone to the surrounding normal skin. The border is violaceous red, shiny, and covered by many minute abscesses. The lesions may be widespread, and in some cases the infection may become systemic as well.

The diagnosis can be established by microscopic examination of a potassium hydroxide preparation of pus obtained from a small abscess in the border. Microscopic examination of the tissue will also demonstrate the blastomycetes within the giant cells present in the granuloma. Blastomycosis must be differentiated from tuberculosis verrucosa cutis, tertiary syphilis, bromoderma, sporotrichosis and epithelioma. This differentiation may be accomplished most conclusively by demonstrating the fungus.

Treatment may at times be successfully carried out in cases in which the infection is localized to the skin, while in cases of systemic blastomycosis the prognosis is nearly hopeless. Large doses of potassium iodide by mouth and roentgen rays locally are generally effective.



Fig. 4.—Monilia paronychia and onychia.

tive, while a small lesion may be excised successfully if the diagnosis is made early.

Chromoblastomycosis.—Chromoblastomycosis is a chronic infection of the skin caused by at least six species of fungus, the most common reported in the United States being *Phialophora verrucosa*. The disease was first recognized in Brazil in 1911 and in the United States in 1915.¹⁸ In recent years it has been reported with increasing frequency.¹⁹ Any exposed part may be affected, and the foot is often the site of the infection. There is generally a history of injury with wood, and the lesion appears at the site of injury within a few weeks. The lesions have been classified into five clinical types: the verrucous, the tuberculoid, the syphiloid, the psoriasiform and those which result in elephantiasis from scarring. They are generally unilateral; pain and itching are absent, and the course is chronic. The diagnosis is not ordinarily suggested clinically; in most cases it is made only on microscopic examination of the tissue. The microscopic appearance is that of chronic granuloma, with the characteristic fungus cells being found both free and within the giant

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cells. Because of the multiplicity of the types of lesions seen, chromoblastomycosis must be differentiated clinically from nearly all the chronic granulomas and tumors, and a microscopic examination is always necessary. Surgical excision or destruction by electrocoagulation may be successful in eradicating small lesions. Large doses of potassium iodide and roentgen rays may at times be helpful.

CONCLUSIONS

In recent years fungous infections of the foot have become endemic throughout all parts of the United States. Much progress has been made in the direction of refining methods for the diagnosis of fungous infections and for combating these diseases both by local and by biologic measures. Rapid transportation and the worldwide movement of great masses of men will inevitably result in a wider distribution of fungous infections that have until now been limited to isolated sections. It is to be hoped that the increased mycologic research that will thus be stimulated will provide new weapons of defense against this menace.

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COMMON HYPERKERATOTIC LESIONS OF THE FOOT

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The high percentage of those who have been rejected or deferred because of foot defects among civilians called to the armed services bears out the often quoted saying that no part of the body is more neglected in general medical practice than the feet. A recent article led "Health of Selective Service Registrants"¹ states that 30,000 of a total of 720,000 examined were unqualified for general military service because of foot defects. Of these, 21,000 were qualified for limited military service and 9,000 were disqualified for any military service.

A large number of those qualified for limited service have defects that are remedial. Many of these defects could have been prevented by giving better attention to footgear in early childhood and youth. Frequent examinations will prevent many bony malformations which later lead to various keratotic lesions of the feet. These preventive measures are neglected now. Even the treatment of minor defects of the feet, regardless of the pain and the disability which they cause, has been neglected by the physician.

Common hyperkeratotic lesions of the feet are discussed here. Such conditions as keratosis blennorrhagica, arsenical keratoses, congenital keratosis palmaris et plantaris and climacteric hyperkeratosis occur so rarely that they are of interest only to the dermatologist. The common lesions with which the physician in general practice can do much are callus, clavus and verruca.

We have been fortunate in having had an exceptional opportunity to diagnose and treat an unusually large number of foot lesions. We do not wish to appear dogmatic but we have seen many mistakes in the diagnosis of keratotic lesions of the feet and errors

in the application of radiotherapy. The recognition of these simple lesions and their proper treatment would prevent many unfortunate sequelae.

CALLUS OR CALLOSITAS

Ordinary callus is a circumscribed or a diffuse hyperkeratotic or indurated area of the skin. The area may be covered with loosely adherent flaky corneous tissue masking the papillary lines. At times this horny mass may be $\frac{1}{4}$ inch (0.5 cm.) thick and very firm. When this is shaved off, the papillary lines are all clearly visible and are not interrupted or broken. There is no central core, and thus a callus is differentiated from a corn. A callus results almost invariably from unusual friction or pressure or both. On the foot it is due either to faulty footgear or some orthopedic condition, such as displacement of the head of one or more metatarsal bones. A callus may cause a burning sensation or definite pain.

Treatment.—Paring, shielding and wearing properly fitting shoes usually effect a cure. The callus is gradually thinned by shaving carefully with a sharp scalpel until the skin is of nearly normal thickness. Moleskin adhesive plaster is placed over the area. A thicker felt pad or a foam rubber one may be placed behind the callus to raise a depressed metatarsal head. Before shaving, applications of 40 per cent salicylate acid may be used to thin the callus.

Excision of a callus is not recommended, because a painful scar frequently results in its place. Roentgen therapy² is usually unnecessary and is inadequate unless the pressure is permanently removed. It is to be condemned in cases in which the plantar fat pad has been thinned.

When pressure results in central vascularization of the callus, roentgen rays are of value to relieve pain and desiccate the capillaries. The rays should be given to the central vascularized part only, in doses of 300 to 600 roentgens. We have found much damage from large doses of roentgen rays or radium given to large areas. The formation of an ulcer is the most common harmful result of overirradiation of a callus.

Cooperation with an orthopedist or a chiropodist is often advisable. A metatarsal bar properly placed behind the metatarsal heads may give pronounced relief in the case of callus.

CORN OR CLAVUS

A corn is a callus in the center of which is a conical horny mass. The base of this keratotic growth is directed outward, and the apex presses against the sensitive subjacent structures. The central core, or radix, is formed by compact laminated horn cells. It presses on and thins or destroys the subjacent epidermis until it reaches the underlying nerve endings, causing much pain.

Corns are termed hard or soft, depending on their location. Both types result from pressure on bony prominences. Hard corns extend over a bony prominence. Soft corns occur between the toes, where they become macerated by sweat.

The most common site for a hard corn is over the outer side of the small toe. A corn is sometimes found in a nail groove, on the tip of a small toe or on a pressure point on the sole of the foot. In the hard corn there is usually one core, but there may be several. Its shape depends on the contour of the bone beneath

This paper, in a symposium on "Cutaneous Disorders of the Foot," is published under the auspices of the Section on Dermatology and Syphilology.

1. Rowntree, L. G.; McGill, K. H., and Folk, O. H.: Health of Selective Service Registrants, J. A. M. A. 118:1223 (April 4) 1942.

2. McCafferty, L. K., and McCarthy, C. L.: The X-Ray Treatment of Callosities and Verruca Plantaris with Some Remarks on the Pathogenesis of These Lesions, J. Bone & Joint Surg. 7:883 (Oct.) 1925.

and may be round, crescentic or ridged. Under the corn in many instances may be found a sac, a so-called adventitious bursa, formed by rupture of connective tissue, which eventually develops into a lined sac.

The soft corn is found most commonly in the interspace between the fourth and the fifth toe. It is usually in the most proximal portion of the toe web or on the medial side of the little toe and appears macerated. Frequently not until the macerated skin is pared away is the radix of the corn found. It may be single but is usually double and is located over two opposing bony prominences. Soft corns are extremely painful lesions. The soft corn has no connection with dermatophytosis. However, it has been mistaken for the maceration one often sees in that infection.

An ill fitting shoe may be a factor in producing a hard or a soft corn by causing intermittent pressure over some bone or joint. Palpation reveals a subjacent prominence. An improper shoe may also upset the mechanics and muscle balance of the foot. This may cause abnormal apposition of bony heads.³

Treatment.—The prevention of corns depends primarily on a change to footgear of the proper size and shape. Conservative therapy is preferred and consists mainly in paring and then protecting by shielding over bony prominences with felt, foam rubber or latex pads. This palliative measure gives the patient temporary relief. For permanent relief, Fripp and McConnel⁴ stress the restoration of proper muscle balance. They advise proper exercises for the feet, faradic foot baths, adhesive strapping to prevent spreading of the metatarsal bones and properly fitted shoes. Occasionally, radical excision of a hard corn and the adventitious bursa when present will effect a cure. At times the bony prominence underlying the corn will have to be removed. Operation for hammer toe, tenotomy or amputation of the fifth toe may have to be performed in some cases.

Roentgen therapy⁵ helps in the relief of pain. It stops the active production of the horny mass making up the corn. Roentgen rays are given to the lesion with close lead shielding in doses of 800, 650 and 500 roentgens at ten day intervals. In our experience, however, radiotherapy has never resulted in permanent benefit in the case of the common corn, hard or soft.

Injection therapy⁶ uses long acting local anesthetics. These are injected in a fan shaped area proximal to the corn. The corn may then be dissected out and a thin felt pad placed directly over the site. Injection alone relieves the pain and frequently effects a cure. Forty per cent salicylic acid plasters may be used with caution, but only on patients who are nondiabetic and who have normal vascular systems. If a hard corn is infected or shows a sinus, soothing wet dressings are indicated. At times a roentgenogram of the phalanx should be taken. The application of 95 per cent phenol or 50 per cent solution of silver nitrate to the sinus often aids in its closure. In the treatment of soft corns conservatism is best. Only in rare instances will it be found necessary to do surgical excision.

In most cases, with a change to more roomy footgear, further therapy comprises dissection of the radix of the corn with a special type of curved chisel, a "soft corn

spoon," elevation of the head of the fourth metatarsal bone by a foam rubber shield and local application of 50 per cent silver nitrate solution to the pared corn. Separation of the involved toes gives relief. This is done by inserting a small felt wedge shaped as a duck's bill, a piece of foam rubber or lamb's wool.

There may be two complications in the case of soft corn, either of them serious in the presence of diabetes or of a disease of the peripheral circulation. In addition to the usual pain of the corn itself there may be inflammation and swelling extending to the dorsum of the foot. Soft corns may be infected by self paring and careless use of advertised solvents. Drainage and wet dressings are indicated. A sinus may complicate the lesion. It may lead into a dilated sac, which should be opened, curetted and packed, or there may be a sinus extending to the flexor tendon sheath.⁷ In some instances a sinus yields to phenol applied to its depth on a fine applicator. In others complete excision of the sinus is required.

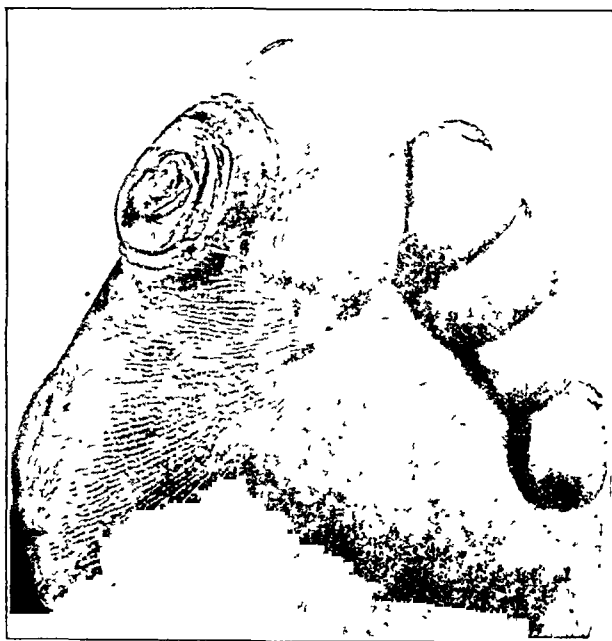


Fig 1—Corn on the big toe showing pronounced lamination of horny tissue

NEUROVASCULAR CORN

The neurovascular corn is rarely mentioned in medical literature but it has long been noted by chiropractors. It is a definite entity. It is usually located under the first or the fifth metatarsal head; at times it may be on the plantar aspect of the big toe or the dorsum of the fifth toe. It is vascularized and intensely painful. Hypertrophied blood vessels may be seen through the transparent horny layer, lying parallel with the surface and not vertically as in verruca. Close examination may reveal minute superficial fissures. After the corn has been shaved, threadlike nerve elements may be seen interspersed with the blood vessels. The corn is small, rarely larger than $\frac{3}{16}$ inch (0.5 cm.) in diameter. It occurs in the hyperthyroid person or in the person with thin textured, delicate skin.

Treatment.—Lesions of this type are resistant to all therapy. They have frequently been mistaken for warts and have been much irradiated without close shielding

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both with roentgen rays and radium. These unfortunate mistakes have often led to chronic ulceration. Since the neurovascular corn is always under a bony head, excision is definitely contraindicated. The resulting scar usually is more painful than the original lesion. However, excision with plastic repair might give a successful result. The best treatment is a combination of roentgen therapy and application of local astringents and padding. When roentgen rays are to be given, the lesion is shaved down and its border outlined carefully in ink. Three doses are given at ten day intervals to this area alone. The initial dose is 800 roentgens, the second 650 roentgens and the third 500 roentgens unfiltered. Irradiation of the corn inhibits further development. Local applications of 50 or 100 per cent



Fig. 2—Mosaic wart with scattered outlying warty elements

silver nitrate solution are made after the roentgen therapy. These applications may also be made without roentgen therapy.

Following the sedative astringent effect of roentgen therapy, best results are obtained by shielding with foam rubber. A piece, preferably $\frac{5}{8}$ inch (0.8 cm.) thick, cut to the shape of the foot from the middle of the long arch to the bases of the toes, skived at the margin, can be placed against the sole inside the stocking. When properly placed it remains in a fixed position. Occasionally, if further localized shielding is necessary, a crescentic piece of thinned foam rubber may be cemented about the painful lesion. This shielding may need to be renewed every second month.

Acid therapy gives little relief, although salicylic acid has helped in some cases.

Injection therapy with long acting anesthetics,⁶ as mentioned with respect to hard corns, has given some relief.

WARTS, OR VERRUCAE

Warts, or verrucae, may be present on the feet. When on the sole they are termed verrucae plantares, and when on the dorsal surface of the foot or toes, verrucae vulgares or planae. Verruca vulgaris is the common seed wart which is so often present on the hands of children and adolescents. Since there is no pressure on the dorsal surface the warts are elevated. Plantar warts, which are nearly level with the surface of the skin, are divided into three types: the "single," the "mother-daughter," or "epidemic," and the mosaic warts.

Single warts are located under pressure points, usually under the metatarsal heads. They may be exceedingly painful. There may be two to four of these under the bony heads. Trauma acts as a definite etiologic factor. These warts are usually the same size. Each is surrounded by callus and has a sharply limited border. Paring reveals the border, and the capillary tips are seen. The tips near the border tend to spray out as if coming from a more central area at the base of the wart. Definite capillary bleeding may be present if paring is deep enough.

Warts of the "mother-daughter," or "epidemic," type may involve any part of the sole. There is a central larger lesion with outlying satellites, some of which may be so minute and transparent as to resemble vesicles. The original, or mother, lesion is usually surrounded or embedded in callus, while the smaller ones are not. At times an area of erythema surrounds them and they may be very painful. Shaved, the mother wart has the same appearance as the single type except that there is more definite radiation of capillaries. When the small vesicular lesions are pared, one or two capillary tips may be cut. Bleeding from these warty capillary tips is rather profuse and prolonged if not stopped by a styptic.

Warts of this type occur usually in adolescents under 18 years of age. They are often accompanied by warts on the hands.

The mosaic wart⁸ is a multiple patchy lesion limited almost invariably to the sole, though occasionally it is found in an interdigital area. To this type, one of us in 1928 applied the term "mosaic" to describe its surface characteristics. Warts of this type appear most commonly as patches of various size on pressure points of the sole, especially beneath metatarsal heads and the heel. They are irregularly bordered, dry and topped by a rather granular, friable, horny mass. They are usually painless.

Before paring, the skin appears rough and granular and the wart is often mistaken for and treated as a common callus. After paring, one sees an area composed of soft cornlike segments so closely packed that those in the central part have angular rather than rounded borders—hence the term mosaic. The individual cell or core is usually from 2 to 3 mm. in diameter. Patches may vary in size from that of a pea to 5 cm. or more across. Papillary lines on the sole are large and translucent, often transparent. By moistening the skin with alcohol, oil or glycerin one can see quite deeply. The earliest stage of a mosaic wart appears as a local widening of a normal papillary line. Sometimes two such minute growths appear side by side within a line. They increase in number and gradually form a patch. Numerous minute outlying patches may

⁸ Montgomery, A. H., and Montgomery, R. M.: Mosaic Wart: An Unusual Type of Plantar Wart, *New York State J. Med.* 37:1978 (Dec 1) 1937.

be found singly or in groups. Some superficially resemble common plantar warts but paring shows their multicellular character.

Coincident with plantar warts of any of these types there may be widely scattered warty lesions on the hands, the fingers or the dorsa of the feet. Accompanying mosaic warts these lesions are usually of the verruca plana type while with the other types they are of the verruca vulgaris type.

A verruca in a corn is another unusual type of wart. It rarely occurs. In a period of fifteen years we have observed about 30 cases. Patients usually complain of an unusually painful corn. Verruca of this type is generally located in a corn on the fifth toe, though it has been observed in a corn on the fourth toe or over a "bunion joint" and even in a soft corn. On paring the horny layer from the corn one can see a central core. When the skin is moistened with alcohol or with glycerin definite capillary tips diagnostic of a wart are seen. The border is sharply margined. Occasionally a wart of the mosaic type is found in a corn. In that case the border is irregular.

The infectious nature of warts has been proved by Wile and Kingery,⁹ Sulkin and Harford¹⁰ and others. They are caused by a filtrable virus. The presence of inclusion bodies in the cells has been established. Epidemics of the "mother-daughter" type occur in schools and institutions. Trauma from a stone or a nail frequently precedes the single type of wart.

Treatment.—The various means of treating verruca follow. The best therapy usually depends on the type present and whether it is radioresistant or radio-sensitive.

Surgical excision is an easy and efficient means of removing both the plantar wart of the "single type" and the "seed" wart. It should not be used for the



Fig. 3.—Wart in a corn. Note sharply margined warts with capillary tips in the center.

mosaic or the epidemic type. The ulceration caused is slow in healing on the plantar surface. Painful scars may result.

Electrosurgery is an excellent means of removing all but the mosaic type. The lesion may be curetted and

the base desiccated or coagulated. The disadvantages are the long period of disability due to ulceration and the possible postoperative painful scar.

Psychotherapy is successful with the epidemic type of wart. There are many forms.¹¹ Rubbing the warts with a piece of stolen meat is an old method. More recently bismuth salicylate, sterile saline solution and



Fig. 4.—Epidemic type of verruca plantaris cured by psychotherapy by insertion of a sterile needle in the buttock.

other solutions¹² injected intramuscularly have been used. Patients have been cured by inserting only a sterile intramuscular needle into the buttocks.

Injecting local sclerosing solutions¹³ directly into the base of the wart has proved successful. A small amount, 1 to 3 minims (0.06 to 0.18 cc.), is used. A larger amount will cause necrosis of the surrounding tissue. This type of therapy is best used for the single type. It is unsuccessful with mosaic warts.

Treatment of warts of all types with acids is successful. Chiropodists cure over 90 per cent by this means alone. Salicylate, nitric, trichloroacetic and dichloroacetic acids are the most popular. The caustics usually leave no scarring, although the treatment itself is painful.

For the mosaic wart, acid therapy has been most successful and is the treatment of choice. In our experience⁸ the most satisfactory method comprises the use of salicylic acid followed by silver nitrate. A 40 per cent salicylic acid plaster cut to the size and the shape of the wart is applied. It may be reenforced with 60 per cent salicylic acid ointment. Monochloroacetic acid may be swabbed lightly over the warts first. This treatment is repeated every five to seven days after the removal of the macerated tissue.

When the thin rete is exposed, it is swabbed with a strong silver nitrate solution (1 grain to 1 minim [0.06 Gm. to 0.06 cc.]) every five to seven days. Outlying patches and single lesions are treated similarly. Care is taken to protect the area from water between dressings. The patches heal usually without scar formation or damage to the plantar fat pad. The treatment outlined is somewhat painful. When monochloroacetic acid is used it may be necessary to relieve a serous

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10. Sulkin, S. E., and Harford, C. G. The Laboratory Diagnosis of Virus Diseases. *J. A. M. A.* 122:646 (July 3) 1943.

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13. Hutton, J. G.: Verruca, with Description of Recently Introduced Treatment. *Colorado Med.* 34:478 (July) 1937.

subwart reaction by incising the overlying tissue. At times wet dressings are necessary.

Radiotherapy: Radiotherapy consists in the use of either radium or roentgen rays. In many cases radiodermatitis and ulceration follow the application of radium to the sole. The aberrant rays invariably affect normal tissue, causing these harmful effects. For that reason we do not approve of its use for plantar warts. However, many skilled operators get good results.

Roentgen therapy is a safe and efficient means of treating the plantar warts which are radiosensitive. The results we reported in 1941¹⁴ showed a total of 90.35 per cent cured by this method alone. Briefly, it comprises the use of a predetermined large initial dose. This is followed at ten day intervals by one, two or three saturation doses, four fifths of the initial dose, through



Fig. 5.—Plantar radiodermatitis with ulceration. Note hyperkeratosis about ulcer and outlying telangiectasia.

a precisely fitting shield hole in lead sheeting. The hole is reduced in size as the lesion shrinks. There has been an entire absence of subwart reaction or of any other unfortunate sequela. It is effective, safe, painless and comparatively rapid and entails no disability. It is the preferred method for patients with diabetes and those with faulty peripheral circulation.

In summing up the treatment for warts occurring on the feet, electrodesiccation with curettage is preferred for verruca vulgaris or plana and for verruca in a corn; radiotherapy, for the single and the epidemic type, although psychotherapy should be tried first in many of the latter cases; a special acid therapy, for the mosaic warts.

PLANTAR RADIODERMATITIS

Radiodermatitis of the plantar surface of the foot presents a fairly characteristic picture. It results from excessive irradiation by means of roentgen rays or

radium. The radiation was given usually for neurovascular corns or mosaic warts, both of which are radio-resistant. At other times a large area was irradiated without close shielding.

The radiodermatitis usually occurs over a bony prominence. Irradiation frequently destroys the fat pad, thus causing the underlying bones to traumatize the skin. The involved area may vary in size from $\frac{1}{4}$ inch to 2 inches (0.5 to 5 cm.) in diameter. It is thickened and may be covered with considerable horny tissue. In one such area which we saw the horny tissue was $\frac{3}{4}$ inch (about 2 cm.) thick. These areas may or may not be ulcerated. When the keratotic material is shaved off, scarring is evident, with the loss of normal papillary lines. At times small horny nuclei are present in the scarred area. Capillary tips varying in size and perpendicular to the surface are seen. Often small warty areas may be found in the lesion or about the periphery showing that the original lesion was a mosaic wart, which is resistant to irradiation. Frequently typical telangiectasis and erythema are found surrounding the keratotic area.

Ulceration is often present in these keratotic lesions. The ulcers are usually small, simulating sinuses. They may be single or multiple and are usually $\frac{1}{8}$ inch (about 0.3 cm.), in diameter though they may be pea sized or larger. Sometimes they are linear. The base of the ulcer is a dirty gray. Ulcers due to irradiation are always difficult to cure.

Areas of plantar radiodermatitis in which there is hyperkeratosis are usually painful. When ulceration is present, pain is more intense. The fat pad may be thinned or destroyed in this type of radiodermatitis. When an extensive burn is present, the underlying bones become rigid, owing to scar tissue. Walking is usually difficult and painful. Pain may be present even when the foot is at rest.

Treatment.—Conservative treatment of radiodermatitis is best. Relief of pressure over the bony prominences is the most important factor in treatment. This is carried out by placing felt or foam rubber padding on the sole. The pad is placed posterior to the involved area and may surround it in a horseshoe manner to give relief. Foam rubber pads may be put directly over the involved area, cushioning it. Therapy is directed toward preventing ulcer formation by means of soothing or stimulating remedies and protective padding. Keratolytic ointments and plasters are contraindicated. Paring with a scalpel is the best method for removing keratotic tissue. Local therapy is of little avail in the scarred area. If ulceration is present, its healing is most important. Best results are obtained with an ointment containing cod liver oil, urea and tannic acid. To this ethyl aminobenzoate may be added. Aloe vera jelly has been recommended, but it is difficult to use when the patient is ambulatory. If this conservative therapy does not give proper results within several months, excision of the area with skin grafting may be carried out as recommended by Blair, Brown and Byars.¹⁵

Roentgen therapy is not condemned for certain hyperkeratotic lesions when given with the proper technic and dosage. Radium should not be used with lesions of the feet because there is lateral irradiation of the normal skin even though the lesions are well

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15. Blair, V. P.; Brown, J. B., and Byars, L. T.: Plantar Warts, Flaps and Grafts, *J. A. M. A.* 108: 24 (Jan. 2) 1937.

shielded with lead. Unfortunately, when radium and roentgen rays are given in excessive doses and with faulty technic this destructive type of plantar radiodermatitis results.

DIFFERENTIAL DIAGNOSIS OF CALLUSES, CORNS AND WARTS

A roughened central mass in an encircling smoother callus should call for investigation. In differentiating lesions of this type one must shave the lesion down until a smooth surface is obtained. Moistening it with alcohol, oil or glycerin aids in the diagnosis. In callus the normal ridge and furrow system is maintained without any breaks in the papillary lines. The area is just thickened and hyperkeratotic. In a corn the calloused area is interrupted by a central horny core which contains no vascular elements. It is painful on direct pressure.

In the "single type" plantar wart the papillary lines are deviated around or interrupted by a small central mass. On superficial paring one finds an oval or rounded horny mass varying in color from the normal skin and sharply limited from it by a light, often transparent horny membrane. In the central mass can be seen minute dark points, which are coagulated blood in the tips of enlarged papillae. These capillaries seem to flare out from a more central point. Further paring opens these tips, causing capillary bleeding. Pain is elicited more by lateral pressure than by direct pressure. If multiple they are all about the same size.

In the epidemic type of plantar wart there is one large original wart similar to a "single type" wart. Surrounding this may be many small warts, at times as many as twenty-five or thirty. These may have a vesicular appearance and are painful. They occur in adolescents.

In the mosaic wart the character of the border of the patch is most diagnostic, and the wart cells are grouped in a mosaic pattern. The border is diffuse and not sharply margined. Small individual warts may be seen near the border of the larger patch. The capillaries in the warty core which come to the surface do not flare out as in the common type of plantar wart.

It is most important to differentiate the neurovascular corn from plantar warts and the hard corns occurring on the sole because of its resistance to most therapy. The neurovascular corn is intensely painful and is located beneath a prominent metatarsal head, usually the first or the fifth. Hypertrophied blood vessels may be seen through the transparent horny surface, lying parallel with the surface.

In plantar radiodermatitis there is a history of previous irradiation of the involved tissue. Scarring or ulceration is present. Various sized capillaries come to the surface of the horny area, which seems to be divided by the scarring into horny "islands" of various sizes and shapes.

SUMMARY

The common hyperkeratotic lesions of the feet include callus, hard, soft and neurovascular corns, warts and plantar radiodermatitis. Differentiation of these simple lesions and their proper treatment as outlined in this paper would prevent many unfortunate sequelae.

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BENIGN AND MALIGNANT TUMORS OF THE FOOT

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SAN FRANCISCO

The division of tumors into benign and malignant provides a convenient but not wholly accurate means of classification. Neoplasms which remain localized to the site of origin are regarded as benign, while those which invade the surrounding tissue and metastasize are termed malignant. Certain benign tumors, however, may at times assume the clinical and the histologic characteristics of malignant tumors and conversely some usually regarded as malignant may in their clinical course be essentially benign. Furthermore, if the differentiation is based on the histologic features, more particularly the increased capacity of the tumor cells for proliferation, some tumors—for example, basal cell epithelioma—while displaying all the microscopic characteristics of malignancy are relatively benign in their clinical behavior. So the clinician, and even at times the pathologist with the tissue actually before him, has difficulty in determining whether the neoplasm should be regarded as benign or malignant. These limitations and criterial inadequacies for neoplasms in general apply equally to tumors of the foot, particularly as to the differentiation in the strictest sense between benign and malignant new growths.

Tumors of the foot, like those of the hand, differ from neoplasms elsewhere, as Pack¹ and others have pointed out, in being frequently multiple. This multicentricity of origin is due to several factors. Many tumors are congenital in origin although they may not appear until later life, while others develop symmetrically because of predisposing causes or a metabolic disturbance as, for example, xanthoma. In regard to some, as Kaposi's idiopathic hemorrhagic sarcoma, the reason for the multicentric origin is not as yet understood, although the presence of constitutional factors is recognized. Except for this multicentric tendency, tumors of the foot have for the most part the clinical features of neoplasms in general. The frequent and repeated trauma that the foot is subjected to may produce pain in lesions ordinarily asymptomatic or, as in melanoma, provide the stimulus for or accelerate the rate of transformation of a comparatively benign or potentially malignant lesion to one actually malignant.

Sporadic lesions occurring singly or as a part of generalized sarcoidosis or of lymphoblastoma (lymphosarcoma, mycosis fungoides and the leukemias) may appear on the foot. Similarly metastasis from a neoplasm elsewhere is at times encountered. The periostitis, osteoperiostitis and osteitis of late syphilis, while not tumors in the strictest sense, may simulate tumors. Syphilitic osteomyelitis of the bones of the foot may extend to the subcutaneous tissues and lead to the appearance of gummatous lesions in the skin. The nodular and nodular-ulcerative lesions of late syphilis on the foot must be differentiated from true neoplasms. Likewise, tuberculosis originating primarily in the skin

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1. Pack, G. T.: Tumors of the Hands and Feet, *Surgery* 5:1 (Jan.) 1939.

or extending from infection of the small bones of the foot may assume the clinical appearance of new growths (fig. 1).

Most of the benign new growths appearing in the skin or in the subcutaneous tissues elsewhere are at times found on the foot. Fibromas, lipomas, neuromas, myomas, keloids, the lesions of Recklinghausen's disease, molluscum contagiosum, various types of nevi and sebaceous cysts, aside from the discomfort caused by pressure, present essentially the same problems of diagnosis and management as similar lesions elsewhere. In this review are included only those tumors which frequently are seen on the feet or which, because of their location, present special problems in diagnosis and treatment.

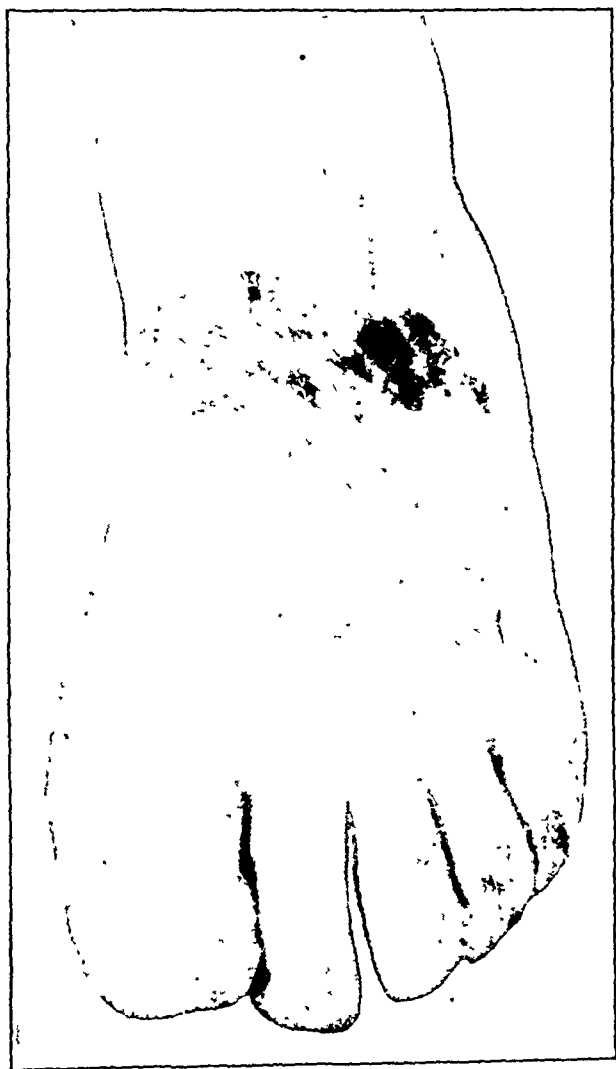


Fig. 1.—Late nodular ulcerative syphilid on the dorsum of the foot. The advancing indurated arciform border is on the left, on the right the pigmented atrophic scarring is seen.

FOREIGN BODY GRANULOMA

Granuloma resulting from penetration of the skin by a foreign body is common on the foot, usually occurring on the plantar surface. The initial lesion is a somewhat hyperkeratotic nodule. Growing slowly, the nodule may reach the diameter of several centimeters and cause some discomfort in walking. It may be destroyed by electrocoagulation or, if large, may be excised. On microscopic examination the tumor is made up of round and epithelioid cells interspersed with foreign body giant cells.

PYOGENIC GRANULOMA

Granuloma of the pyogenic type occurs frequently on the foot, the most common site being about the sulcus of a nail. The lesion is soft, vascular and sharply demarcated from the adjacent normal skin and may be

either pedunculated or sessile. Growth is usually rapid and may reach the diameter of a centimeter or more. Clinically the pyogenic granuloma simulates an infected angioma, although the differentiation is usually not difficult to make if one considers the history and the rapid development of the lesion. Small doses of x-rays or of radium usually cause rapid disappearance of the granuloma; if this therapy is not available, the tumor may be destroyed by electrodesiccation.

ANGIOMA

Various types of angiomatous tumors may appear on the foot. For some, as the glomus tumor, or angioneuroma, the foot is the most frequent site, while for others, as Kaposi's hemorrhagic sarcoma, it is frequently the site of the initial lesion. The great majority of angiomatous tumors are congenital in origin, and even in those appearing in later life the anlage has probably been present since early life. The many forms of angiomatous tumors, the difficulties of reconciling the histologic structure with the clinical course, the confusing nomenclature and the variable etiologic factors concerned, particularly as to tissue of origin, have contributed considerably to the difficulty of making a logical classification. The long existing confusion has recently been clarified somewhat by Oughterson and Tennant.² The difference in appearance, rate of growth and capacity to metastasize observed among angiomas of similar microscopic features becomes now, at least in part, understandable. Vascular tumors, according to Oughterson and Tennant, may be classified into three groups. The first group, the angiomas, includes the vascular malformations such as arteriovenous fistulas, the vascular nevi and the arterial, venous and lymphatic angiomas. Also included are the angioblastomas (hemangioblastoma and lymphangioblastoma), vascular tumors which are made up of rapidly proliferating cells and appear to be true neoplasms. The glomus tumors, or angioneuromas, comprise the second group, and the third is Kaposi's idiopathic multiple hemorrhagic sarcoma. The latter, despite the fact that its cause is unknown, is grouped among angiomatous tumors because of clinical and histologic similarities. Although they may be locally invasive and destructive and recur after attempts at removal, with the exception of Kaposi's sarcoma, the vast majority of the vascular tumors are not malignant in the sense that they metastasize generally or cause death. There have been, however, a few reports of metastasis from angioblastomas of the extremities (Ward and Jonas³).

Among the benign angiomas the most common are the vascular nevi. Frequently these are multiple, and usually they are present at or become evident soon after birth. Occasionally they may appear in later life and even in old age. The nevus, made up almost entirely of dilated blood vessels, may remain stationary or may grow at about the same rate as the body or at times with startling rapidity. With growth there may occur a displacement of the surrounding structures and at times even erosion of cartilage or bone. Benign angiomas may be in the skin, the subcutaneous tissues or the skeletal muscles or about the bones, the joints or the tendon sheaths. In the latter sites they may produce considerable pain and disability. In size they vary from a growth a few millimeters in diameter to a huge tumor involving the entire extremity. Either alone or in

2. Oughterson, A. W., and Tennant, Robert: Angiomatous Tumors of the Hands and Feet, *Surgery* 5: 73 (Jan.) 1939.
3. Ward, G. E., and Jonas, A. F., Jr.: Metastasizing Hemangioma Simulating an Aneurysm, *Arch. Surg.* 36: 330 (Feb.) 1938.

combination with lymphangiectasis they may produce grotesque and gigantic enlargement of the foot or of the entire lower extremity (fig. 2).

The appearance of benign angioma is dependent largely on the site and the extent of the lesion. In the common port wine mark, or *nevus flammeus*, the vascular dilatations are small and more or less on the same plane in the skin, and the surface is smooth and flat, usually dark red. The most common vascular nevus, *hemangioma simplex*, is raised and even at times pedunculated, the surface is usually slightly irregular and the color varies from bright to dark red. *Cavernous angiomas* differ from simple hemangiomas in that the blood filled channels are connected with angiomatous vessels. They are frequently deep seated and large, and the color is dependent largely on the depth, so that at times they may be barely visible as a bluish tracery beneath the overlying skin. If more superficially located they vary in color from dark red to reddish blue. The skin may be atrophic and adherent.

Many angiomas involute spontaneously, usually over a period of years. Treatment if feasible should, however, be begun as soon as the tumor is discovered. There is no satisfactory method of treating the superficial, or *nevus flammeus*, type, although the water cooled quartz mercury vapor arc lamp applied with pressure may at times lessen the disfigurement. The simple and the cavernous angiomas are easily treated with x-rays or radium, given usually in small and well spaced doses, or by the injection of sclerosing substances. A lesion not responding to these measures may be surgically excised and, if necessary, the defect repaired by a skin graft. Small lesions may be destroyed with solidified carbon dioxide or by electrodesiccation. With proper and careful treatment the results are usually most satisfactory.

ANGIOBLASTOMA

Included in the angioblastoma group are the angio-blastic sarcomas, the angioendothelial sarcoma and the perithelial sarcomas. These tumors, despite their malignant clinical and histologic appearance, rarely metastasize, although they may be locally invasive and destructive. The tumor nodules are red or bluish red, vascular in appearance and frequently multiple. Larger lesions frequently ulcerate. The differentiation between the various tumors in this group is usually made by microscopic examination. If the lesion is small and readily accessible it may be excised, although irradiation, despite its limitations on the foot, is the simplest and usually an effective method of treatment.

ANGIONEUROMYOMA

Although first described many years ago angioneuromyoma, or the glomus tumor, has only recently received much recognition. In approximately one third of the cases it occurs on the lower extremity, the nail bed being the most frequent location. It originates from the neuromyoarterial glomus, is red or bluish red and small, seldom reaching a diameter of more than 1 or 2 cm. Growth is slow and not locally invasive. When the tumor is located beneath the nail the characteristic pulsating changes in color are less evident. While pain at times may be absent the glomus tumor is usually extremely painful, the pain being frequently paroxysmal and radiating in character, often initiated or aggravated by changes in the weather. The glomus tumor may be excised or destroyed by electrocoagula-

tion. Microscopic examination reveals a well encapsulated lesion made up of muscle, nerve and vascular tissue (fig. 3).

KAPOSI'S SARCOMA

Kaposi's idiopathic multiple hemorrhagic sarcoma occurs for some unexplained reason preponderantly among males of the laboring class native of northern Italy, Russia and Poland. The cause, like the reason for the geographic distribution, is not known, although trauma is believed by some to be one of the factors. After much careful study Dörffel⁴ concluded that the disease is primarily one of the reticuloendothelial system. The initial lesion, usually a small papule or nodule, is frequently on the leg or the foot. In the beginning the tumors are soft and vascular, but as they enlarge and coalesce to form red, reddish brown or bluish black plaques the tumor masses become firm



Fig 2—Enlargement of the lower extremity, including the foot, as a result of cavernous angiomas

and often hyperkeratotic. Frequently the lesions are symmetrical and bilateral. They grow slowly and after a variable time spread over the skin and involve the viscera, particularly the lungs and the lymph glands. Hemorrhages from the lesions in the skin and the viscera frequently occur. Edema of the leg or the foot and elephantiasis-like changes may ensue. The rate of progression is slow and variable, and spontaneous remission and regression of the lesions may at times take place, leaving pigmented atrophic scars. The duration of life is on the average between five and ten years, death being due to intercurrent infection, cachexia, visceral involvement or repeated hemorrhages.

Irradiation may occasionally be followed by a seemingly permanent regression, but in most instances there are recurrences. Small doses of about 75 roentgens

⁴ Dörffel, Julius: Histogenesis of Multiple Idiopathic Hemorrhagic Sarcoma of Kaposi, *Arch. Dermat. & Syph.* 26: 693 (Oct.) 1932

given at weekly intervals to the involved regions usually are effective, although for the more deeply infiltrated lesions larger amounts of filtered x-rays may be required. Arsenic in the form of solution of potassium arsenite or the intramuscular injection of solution of sodium arsenate is occasionally effective and should be used as an adjuvant to irradiation.

SYNOVIAL CYST

Originating from the synovial membranes of joints, tendon sheaths and bursas, cystic tumors are not uncommon on the foot. The most frequent sites are over the metatarsal-phalangeal articulations. The lesions are small, either nodular or globoid and at times hyperkeratotic over the surface. Usually they are painless, although at times they may cause some



Fig. 3.—Angioneuroma, or glomus tumor, beneath the nail of the great toe (patient of Dr. L. R. Chandler).

discomfort. When punctured they exude a syrupy fluid. These cysts may be surgically excised, although recurrences are frequent. Irradiation is at times effective in causing them to disappear.

GANGLION

The ganglion, common on the foot, results from fibroplasia and colloid degeneration of a synovial membrane, a tendon sheath or occasionally a tendon. It is smooth, rounded, firm, frequently multiloculated and on palpation gives the impression of containing gelatinous fluid. Aspiration of the viscid fluid followed by injection of a sclerosing substance is a simple method of treatment. If this is ineffective the ganglion may be excised.

FIBROMA

On the foot fibroma may occur as an isolated lesion or as a part of generalized fibromatosis (Recklinghausen's disease). Occasionally it is found in close

association with a tendon sheath or a joint capsule, but most commonly it is in the skin or the subcutaneous tissues. Fibromas vary in consistency from soft to hard and may reach a diameter of several centimeters or more. A variety of fibroma, histiocytoma cutis, which occurs most frequently on the extremities, has been described by Seneor and Caro.⁵ It is usually single, small, ovoid or round and either grayish brown or bluish red. Microscopic section shows this tumor to be made up of fibrous blood vessels, bundles and histiocytes filled with lipoid droplets and colloidal iron. Should treatment of a fibroma be necessary it may be destroyed by electrocoagulation, if small, or excised.

XANTHOMA

Tumors made up of lipoid containing histiocytes and fibrous tissue and resulting from a disturbance of the fat metabolism may appear on the foot, particularly on the plantar surface, as a part of disseminated xanthomatosis, as isolated lesions of xanthoma tuberosum multiplex or as large tumors involving tendon sheaths and joint capsules. Xanthoma on the skin appears as yellow-pink nodules varying from a few millimeters to one or more centimeters in diameter. Involution may follow and recurrences may be prevented by rigid restriction of fats in the diet.

The relation between xanthoma occurring as an isolated tumor in or about a tendon or its sheath or a joint capsule and the so-called giant cell tumor, or sarcoma, of these structures has been debated. The association of the latter tumor with xanthomas elsewhere, the frequent accompanying hypercholesteremia and the histiologic resemblances to xanthoma, including the presence of lipoid containing "foam cells," has led to the belief that the giant cell tumor is xanthomatous. On the feet the tumors appear commonly near the tendinous insertions as slow growing, usually painless, moderately soft or firm nodular masses. They may at times be attached to the capsule of the ankle joint. Destruction and invasion of the contiguous bony structures may occur, but the tumors are otherwise benign in their clinical course. Surgical extirpation is usually not difficult, although there may be recurrences.

MELANOMA

The capacity to produce pigment characterizes melanomas, although at times this is not exercised and the lesions are nonpigmented. In the strictest sense the term melanoma should be reserved for the highly malignant tumors originating in either the ectodermal or the mesodermal nevi. Lentigenes and pigmented and nonpigmented nevi, being ectodermal in origin, are the lesions from which melanocarcinoma originates, while the rarer mesodermal blue nevus is the precursor of melanosarcoma.

Approximately 15 per cent of all melanomas, according to Pack and Adair,⁶ occur on the foot, and of these slightly more than 8 per cent are subungual. For some not as yet understood reason the incidence among Negroes is comparatively lower, and interestingly, when melanomas are present the sole of the foot, where pigmentation is least, is the most frequent site. The relation of melanoma and trauma to presumably benign nevi has been much discussed. While the history of injury to, or the attempt at removal of,

5. Seneor, F. E., and Caro, M. R.: *Histiocytoma Cutis*, Arch. Dermat. & Syph. 33: 209 (Feb.) 1936.
6. Pack, G. T., and Adair, F. E.: *Subungual Melanoma*, Surgery 5: 47 (Jan.) 1939.

clinically benign nevi is often given, it may well be argued that the lesion was already malignant when the trauma occurred. Regardless of this controversy, in view of the high incidence of melanoma on the foot pigmented nevi should at least be carefully watched and if located in an area where friction and trauma are continual should for safety be excised, particularly if it is deeply pigmented or shows any evidence of growth.

In addition to increased pigmentation and growth the earliest signs of malignancy are an erythematous areola, a diffusion of pigment into the surrounding normal skin and a development of satellite nodules about the periphery. The rate of growth may at times be amazingly rapid until the tumor becomes a nodular mass with a broad or pedunculated base. The peripheral lesions likewise enlarge, and the individual tumor may reach the size of an orange; the surface frequently becomes ulcerated and covered with serous or purulent exudate. Metastasis to the regional lymph glands, to the internal viscera, particularly the liver and the lungs, and to the skin elsewhere is usually relatively early. At times diffuse melanotic pigmentation of the skin is the first evidence of generalization. Both the primary tumor and the metastatic lesions may occasionally be nonpigmented, in which event the diagnosis is made by microscopic examination (fig. 4).

The most common site of melanoma of the nail bed is the great toe. Because of the resemblance, this tumor was called "melanotic whitlow" by the older writers. Through the nail plate the pigmentation is at times difficult to make out. In the diagnosis of the lesions in an early stage the presence of the peripheral pigmentation is an important point. As the melanoma grows the nail plate is elevated and becomes thickened and fragile and eventually is destroyed to reveal a black, well demarcated fungating or ulcerating tumor.

The successful management of melanoma depends largely on early diagnosis and adequate removal. Suspected lesions should not be destroyed by cauterization with acids or the electrocautery but excised with a fair margin of normal skin for microscopic examination. Although some melanomas may be sensitive, irradiation should be used only as palliative therapy for advanced, inoperable lesions. The subungual tumor is best treated by amputation of the digit. A primary tumor elsewhere on the foot requires a radical excision carried down to the fascia, the cosmetic results being secondary to the thoroughness with which removal is carried out. When the diagnosis has been confirmed by examination of the tissue, a radical dissection of the regional lymph glands, whether enlarged or not, should be made either at the time of operation or very soon thereafter. While the prognosis is always unfavorable and a recurrence may suddenly appear after many years, the number of satisfactory results even in patients with regional metastasis is sufficient to warrant the attempt at a cure despite the extent of the surgical procedure.

CARCINOMA

On the foot primary carcinoma is relatively uncommon. It may originate from normal skin or from the scar of a burn, a discharging sinus, a keratosis or other benign lesion. Injury to the skin by mechanical friction or by irradiation may be a predisposing cause. Despite the frequency with which corns and calluses are found on the foot, carcinoma rarely originates from

these, as Mason⁷ and others have pointed out, indicating that repeated chronic irritation must be a minor factor. Likewise, for some unexplained reason, carcinoma seldom develops in chronic varicose ulcers (Tenopyr and Silverman⁸). While occasionally transitional or basosquamous cell carcinoma may be found, by far the most common is the squamous cell variety, usually of a relatively low grade of malignancy (group 1 or 2, Broders).

The early lesion is usually a firm indurated nodule with a scaly dry, almost parchment-like surface; at times it may be hypertrophic with a verrucous surface over which dilated capillaries traverse. Growth is usually slow, and ulceration may not appear for several or more years. Eventually, if untreated, the cancer becomes a large malodorous ulcer or a fungating mass,

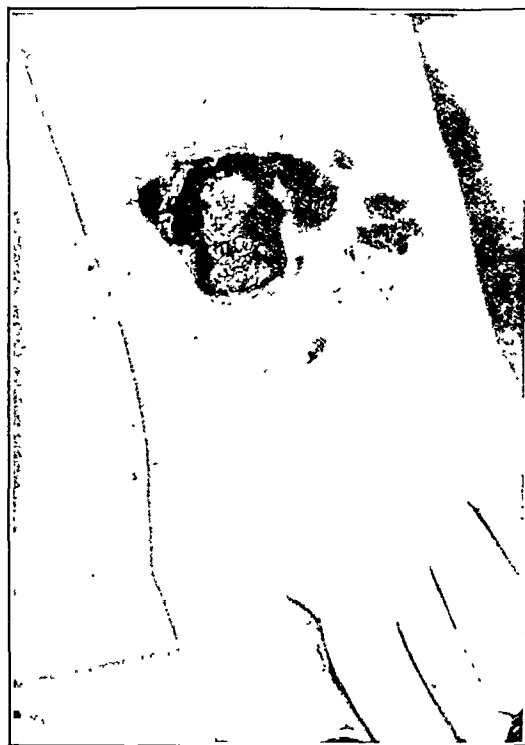


Fig. 4.—Melanoma on the dorsum of the foot. About the periphery of the large primary tumor are smaller pigmented satellite lesions.

frequently secondarily infected and extending to invade the underlying tendons, muscles and even bones. The regional lymph glands become enlarged, usually after several years or more, although this may be due to secondary infection and not necessarily indicative of metastasis. Metastatic lesions appear in the viscera, particularly in the liver and the lungs, and in the skin. For diagnosis and as a guide in therapy a biopsy should be made even though the clinical appearance may be so typical as to make it seem superfluous.

Except for small lesions and the rarer, more sensitive group 3 and 4 cancers, excision is to be preferred to irradiation in the treatment of carcinoma of the foot. Most of the lesions are relatively resistant, requiring large and destructive amounts of radiation. This, when given to regions where impairment of arterial and

7. Mason, M. L.: Carcinoma of the Hands and Feet, *Surgery* 5: 27 (Jan.) 1939.

8. Tenopyr, Joseph, and Silverman, Irving: Relation of Chronic Varicose Ulcer to Epithelioma of the Skin, Based on Records of Over 1,000 Chronic Leg Ulcers, *Ann. Surg.* 95: 754 (May) 1932.

venous circulation is common, particularly in the age group in which cancer usually occurs, frequently results in ulceration and necrosis with prolonged healing. Surgical excision with either primary closure or repair of the defect by an intermediate thickness graft is usually the preferred method of treatment. For the larger invasive and fungating cancer the removal of which results in extensive mutilating defects, amputation is at most times advisable. Carcinoma of a toe is usually best treated by amputation of the digit.

Frequently it is difficult to decide whether a radical dissection of the regional lymph glands should be made. Secondary infection in the tumor may be responsible for the enlargement and may simulate metastasis. Invasion of the lymph glands in the absence of palpable enlargement is rare, according to Mason. If palpable lymph glands are present a radical dissection should be done, as 50 per cent of the enlargements will be due to metastasis.⁷ Similarly a prophylactic dissection should be made when the primary lesion is deep and invasive or is so extensive as to necessitate amputation.

SARCOMA

Sarcoma is relatively uncommon on the foot. It may originate in connective tissue, muscle, nerve, tendon, tendon sheath or synovial membrane. From these, various types of sarcoma including fibrosarcoma, liposarcoma, myosarcoma, fibroneurosarcoma and synoviosarcoma are derived. The most common is fibrosarcoma, which appears first as a small, well circumscribed nodule that grows slowly to become a reddish nodular tumor. Ulceration is uncommon and, though the tumor is locally destructive and invasive, metastasis seldom occurs. Occasionally fibrosarcoma may assume the histologic characteristics and the clinical course of the highly malignant tumors. Dermatofibrosarcoma protuberans is a variety of sarcoma which may occur on the foot. Beginning as a small, flat, firm cutaneous or subcutaneous nodule it gradually enlarges to become a large blue or brownish sessile or pedunculated tumor. Although the tumor mass may reach considerable size, ulceration and metastasis rarely occur. At times regression and even involution may take place spontaneously.

Several types of sarcoma may originate in synovial membranes, tendon sheaths and tendons. The tumors usually manifest themselves as either slow or rapidly growing painful enlargements beneath the skin. Frequently there is a history of single or repeated trauma. In this group are included synoviosarcoma, arising from the synovial membrane, spindle cell sarcoma of the tendon sheath and joint capsule, whose origin may be difficult to determine, and sarcoma of the plantar fascia.

The diagnosis and differentiation between the various types of sarcoma are made largely by microscopic examination of the tissue. With the exception of lymphosarcoma, most of the neoplasms in this group are notably insensitive to irradiation. At times, however, irradiation is used in conjunction with the surgical removal of a deeply invasive tumor. The less malignant and early lesions may be radically excised and carefully followed for evidence of recurrence. Extensive and rapidly growing tumors, even in the absence of regional and pulmonary metastasis as well as recurrence, necessitate amputation, the resection being usually made at the junction of the upper with the lower two thirds of the leg.

In the management of sarcoma of the foot the fundamental principles that underlie the treatment of neoplasms in general should be followed. These are adequate diagnosis, which in most instances includes microscopic examination of the tissue, adequate treatment and adequate follow-up over a period of years.
450 Sutter Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MADDEN, NOMLAND, CARO, R. M.
AND A. H. MONTGOMERY, AND KULCHAR

DR. R. C. JAMIESON, Detroit: The difficulty in diagnosing foot lesions which has been mentioned by Dr. Madden cannot be too strongly emphasized, as all lesions on the feet are "athlete's foot" to the layman. Consequently many proprietary preparations acquire an unjustified reputation for being a "cure" for fungous infections which were never properly nor correctly diagnosed. Many cases of dermatitis of the feet are aggravated or initiated by the use of woolen socks as well as by continued use of oil and water soaked shoes and to these can be added the use of home remedies, especially some of those publicized in lay magazines, which are potentially dangerous. Patients should always be warned to sterilize shoes with formaldehyde vapor and not put the liquid in the shoes. Contact dermatitis is not usually seen by the dermatologist until after the use of many fungicidal remedies, and it is then difficult to determine the origin; but the location of the original dermatitis should give the clue as to whether it is of fungous origin or not. The problem of psoriasis of the feet is interesting and usually difficult, especially when the nails are involved and there are no lesions elsewhere on the body. Psoriatic nails are usually dismissed or treated as fungous infections, and the tendency is to overtreat no matter what method is used. Excessive roentgen therapy is too often used, but on the feet it should be used even more cautiously than elsewhere. I am rather pessimistic about the ease of cure of neurodermatitis of the feet, as many resist everything—x-ray and local treatment of all forms. The greatest caution should be used in the treatment of plantar warts by roentgen rays. Many such warts require far more treatment than is safe to give and in a few cases malignant growths have resulted. In my judgment now it is wiser to use remedies not so potentially dangerous.

DR. PAUL A. O'LEARY, Rochester, Minn.: Although thromboangiitis obliterans is not observed exclusively among cigaret smokers, it is nevertheless advisable to have patients suffering from this disease discontinue smoking entirely. Occasionally in mild types of cases the elimination of cigarets will modify the symptoms considerably, and the few women I have seen who had thromboangiitis have been heavy smokers. The influence of the ill effect of the cigaret paper rather than the tobacco has led to suggestive but not conclusive deductions. The arctic explorers and northern woodsmen have long known that, when their hands or feet were badly nipped by the cold, if they rubbed the affected extremities gently with snow but not with ice they had less pain than if they did not do this. The temperature of snow is not as low as that of ice, and the gentle rubbing and massage, which must not be vigorous, are of help. When blisters appear a day or more after exposure, the treatment is similar to that of a second or third degree burn by the use of boric acid ointment, sterile dressings, rest, elevation and so forth. The application of cool wet dressings is more comfortable than that of heat, especially when secondary infection occurs. Livedo reticularis is a fairly common disease. It is characterized by blotchy and reticulated blueness of the extremities and is seen most often among young women. It is associated with varying degrees of dyshidrosis and can be distinguished from the occlusive vascular diseases by the absence of occlusion of the vessels. The network of lividity usually found between the ankles and the knees is characteristic. Exposure to cold aggravates the condition, as do emotional upsets. Recently Barker, Hines, Craig and others have reported successful results following sympathectomy in cases in which ulcerations of the legs and feet had developed. The mild types

of livedo reticularis are common and usually can be controlled by avoidance of undue exposure to cold; no medication has been helpful, as the cause of the disease is unknown. My observation of patients suffering from the combination of sclerodactylia and Raynaud's disease to which the term acrosclerosis has been applied has led me to believe that it is an entity allied to Raynaud's disease in contradistinction to scleroderma but quite distinctive from the former in a number of ways. Sympathectomy has been of help in these cases for short periods only, that is, one or two years. In many cases the disease is arrested spontaneously, resulting in atrophy of the subcutaneous tissues rather than of the skin. The arrest usually is accompanied by a considerable decrease of the vasospastic phenomena. In the severe forms of acrosclerosis, extensive gangrene resulting in spontaneous amputations of the digits has not been controlled by any of the measures used in overcoming spastic diseases of the blood vessels or sclerodermatous infiltrations. To say that these patients have scleroderma associated with Raynaud's disease is getting the cart before the horse, because the fundamental process appears to be in the blood vessels, not in the skin, and the degree of cutaneous sclerosis, although it is what the patient complains of, is of secondary significance.

DR. GEORGE C. ANDREWS, New York: I regret that the roentgen technic employed by the Montgomerys is not given in greater detail. Mention of the roentgen unit technic alone without giving the voltage and filtration is incomplete. In my opinion the so-called mosaic wart is an advanced type of growth in which multiple warts have coalesced into a patch. It is natural that this type is more difficult to treat than single and smaller lesions. Some mosaic warts occur on the convex aspects of the heels, so that equable distribution of dosage is not easy. However, I have cured too many of them by x-ray treatment or by a combination of electrodesiccation and intramuscular injections of bismuth to give up these methods. If acid treatment is to be used, I prefer to remove the mosaic wart by desiccation and to apply the acid to the base if any spots cause one to suspect a recurrence. This method shortens the treatment and, in my experience, is less painful than the treatment by acid alone. As to the etiology of corns and their tendency to localize on the outer side of the small toe, I would like to suggest another cause in addition to those mentioned by the authors. If one will examine the inside of almost any stocking or sock, one will find a piece of redundant thread at the outer end of the seam. This thread is often $\frac{1}{2}$ to 1 inch in length. It has a tendency to become wound into a hard little ball which rests on the outer surface of the small toe, into which it is pressed by the shoe. I suspect that many corns are caused in this manner. Squamous cell epithelioma of the foot is extremely rare. I have seen 2 cases in ichthyosis hystrix (horny epidermal nevus). Arsenical epitheliomas occur more often in the hands than on the feet. I am glad that Dr. Kulchar emphasizes the fact that hemangioendotheliomas, despite their histologic features that may suggest a type of sarcoma, are really not malignant and, if thoroughly removed, do not recur.

Hospital Room Construction.—In parts of the United States where hospital planning is regulated by local legislation the minimum cubic space allowance for patients in public wards is only 800 cubic feet. With the existing tendency to the use of low ceilings, say 10 feet in height, an allowance of 800 cubic feet per patient corresponds to 80 square feet of floor space per bed. American authors usually propose the more liberal standard of 1,000 cubic feet. A private room based on the minimum requirement of 800 cubic feet would measure only 8 by 10 feet, but rooms so diminutive are extremely rare. Rooms 9 feet 6 inches by 13 feet, 10 by 14 feet, 10 by 15 feet and 11 by 16 feet are more common. De luxe rooms are, of course, larger. These measurements do not include the private or individual toilets or baths that are nowadays so widely used, not so much for the patient's comfort as to facilitate nursing service.—The Hospital in Modern Society, edited by Arthur C. Bachmeyer and Gerhard Hartman, New York, Commonwealth Fund, 1943.

THE CONCEPT OF ORGANIC UNITY AND: PSYCHOSOMATIC MEDICINE

GEORGE DRAPER, M.D.

NEW YORK

From earliest times, physicians have been embarrassed by what seemed to be two separate phases of man. One of these, ponderable and physically tangible, has been called the body or soma; the other, termed psyche, imponderable and invisible, likewise appears as an immensely powerful factor in his being.¹ What the relationship of these two aspects of the creature might be, and how they may interact, has been a point of controversy throughout the history of medicine. One thing about them, however, has been definite: They are both, in some way, included in the individual animal unit. The term "psychosomatic medicine" was coined with the intent of bringing the parts together. Unfortunately, the two-pronged word does not adequately succeed in establishing the connotation of biologic unity. It still implies that the two parts, each with complete independence, work reciprocally on each other. This belief does not satisfy sound biologic tenets, and it tends to oversimplify the science and art of clinical medicine.

The infinite complexity of any living organism is a challenge to man's usual habit of finite thinking. Therefore, in the attempt to understand even a one-celled animal, it has been divided into the cytoplasm and nucleus. But when we strive to reassemble the creature so that it functions properly again, we still find ourselves in the frustrated company with all the king's horses and all the king's men. Moreover, when through special interest the focus of an investigator's individual attention becomes fixed on a part, the latter grows for him in significance until it often attains the power of a dominant minority. And beyond these considerations we are faced with the age-old problem of the relative significance to human beings of the terms mind and matter. Where does the physical body end and consciousness begin? Or does the latter exist free in the cosmos and pounce demon-like or godlike into the prefabricated animal carcass? It is not my purpose in this essay to carry on that discussion. But it is necessary to point out that the only way in which man has been able to deal with the imponderable forces which he has sensed to be present, either within or about him, is by abstract words or symbols. There is, however, a peril in this process, the danger that the possible, wished for or probable reality for which a given abstraction stands may be obscured by the poignant connotation of the symbol itself, which then takes on the fixed nature of a reality. This widespread insensitiveness to, or misinterpretation of, symbolic impact has perhaps been one of the great obstacles to a prompter, wider acceptance of any threat to traditional standard beliefs. Furthermore, in the very term "psychosomatic" the same danger still lurks about the first half of the Janus-faced word. Even the hybrid contraction "psysomatic"² is unhappy, coined as it was in order to connote, at least by the elimination of one syllable, a more intimate relationship between mind and body. And so, as studies in human constitution

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1. Some of the material in this article is also presented, but often differently phrased, in the book entitled *Human Constitution in Clinical Medicine* by the same author and published by Paul B. Hoeber, Inc., the Medical Department of Harper and Brothers, New York, 1944.

2. Draper, G.: *Disease—A Psychosomatic Reaction*, J. A. M. A., 90:1281 (April 21) 1928.

have proceeded,³ increasing dissatisfaction has developed with the term psychosomatic. By virtue of its structure it still implies a dichotomy, criticism of which was earlier implicit in Jelliffe's⁴ phrase "psychosomatic monism." Consequently, until a chemical and physical formulation is achieved which will explain the two expressions of energy which are now called reason and emotion on the one hand and somatic physical phenomena on the other, we are inevitably constrained to use abstractions for things sensed but imponderable and unknown. We shall have to accept frankly the statement of William James that "All our abstracts must be confessed to be but imperfectly imaginable things."

It is because of the foregoing difficulties and dangers that somatologists and psychologists together have recently been passing through what might be called "jamming" operations. The significance of that figure will at once be apparent to any one who has observed the capillary blood flow in a frog's foot. There one sees the individual corpuscles being tumbled along by the inexorable current, all hurtling in the same direction. They stumble, one after the other, sometimes in single file, some rudely passing others or establishing an impasse at forks in the tubing. But such controversies usually arise from misunderstanding of the meaning of meaning.⁵ Actually, psychiatrists and internists alike are pursuing the same objective, namely the nature of the man within the patient. Perhaps recourse to the natural historian's point of view may be of value in clearing the air.

THREE CONCEPTS

In the early part of this century a group of observers, including such men as E. B. Wilson, F. R. Lillie, Jacques Loeb, F. E. Ritter, T. H. Morgan, C. M. Child, E. G. Conklin and R. G. Harrison, broke away from what had been called the elementalist school and, following Aristotle, considered the living creature to be greater than its parts and sought to examine the organism as a whole. There were three essential concepts which emerged from this philosophical discipline. The first of these was well stated by Child.⁶ "Each living thing," he wrote, "represents an order and unity of some sort, maintaining itself with more or less success in a changing environment." For the second Ritter⁷ then insisted that the material substratum of life is not a single chemical individual or substance, protoplasm, but actually many protoplasms. Differing qualities of these protoplasms are inherent in the cells and therefore must represent genetic biologic substrates which inevitably determine first the differences between species, then, more subtly, those between individuals of the same species, and finally those between all organs and tissues within the individual. This notion is supported by the experiments of H. V. Wilson,⁸ which demonstrated the failure of fusions between mixed cells of different species. And the principle is further illustrated by Leo Loeb⁹ and by Morgan¹⁰ in their studies on grafting and fertilization, which have shown that

"the results are more successful for unions between closely 'related' forms than between distantly 'related' forms." Furthermore, it is well known to surgeons that homologous grafts are essential to the surest success. Leo Loeb regularly uses the phrase "individuality differential" as determined by the varying behavior of autotransplants, homoiotransplants and heterotransplants. Indeed, he speaks of transplantation as "an instrument for the analysis of individuality."

The third concept, that concerned with internal environment, may be divided into two parts, the humoral and the cellular. The former, probably first demonstrated by Claude Bernard in 1859, has recently been brought strikingly to mind again by Cannon's¹¹ emphasis on the circulating fluid elements of the body. This inner fluid environment is remarkable for its stability. Moreover, it serves to ensure by fluid bonds E. B. Wilson's¹² tenet that the real unity is that of the entire organism. "As long," he writes, "as its cells remain in continuity, they are to be regarded, not as morphological individuals, but as specialized centers of action into which the living body resolves itself and by means of which the physiological division of labor is accomplished."

The second part, that which deals with the reciprocal effects of neighboring cells and tissues on one another, has been fully reviewed by Ross G. Harrison.¹³ Moreover, these effects appear to be subject to orderly processes within the cell. For, as Conklin¹⁴ says, "There is something in the organization of the individual which makes it more than just the sum of its parts." And the presence of these orderly and specific processes within the cell can be explained only by genetic transmission.

Thus, for example, when the egg of a frog is turned, there is manifest rearrangement of its constituents. The cortical layer which holds most of the pigment and chief part of the gray crescent remain in position. But the main mass of the heavy white yoke rotates as a unit. In other words, turning the egg does not result in an indiscriminate mixing of the elements but in an orderly rearrangement which may result in a normal embryo. When the egg is inverted, at the two cell stage, the rearrangement takes place independently in the two cells, and twins may develop. Consequently, it appears that even in its earliest period development is affected by the interaction of cell constituents according to an orderly topographic arrangement.

ORGANISMIC POINT OF VIEW

The notion of specialized centers of action advanced by Wilson as an interpretation of the cell is reflected in the discoveries of Vogt,¹⁵ of Spemann¹⁶ and of Coghill.¹⁷ Vogt showed by means of appropriately applied dyestuffs that early amphibian embryos are composed of a mosaic of discrete cell masses and that each one of these cell blocks goes on to the formation of a specific adult part or system. The predestination

3. Draper, G.; Dupertuis, C. W., and Caughey, J. L.: *Human Constitution in Clinical Medicine*, New York, Harper & Brothers, 1944.

4. Jelliffe, S. E.: *General Reflections on Psychosomatic Monism*, New York State J. Med. **39**: 1017, 1939.

5. Ogden, C. K., and Richards, R. K.: *The Meaning of Meaning*, New York, Harcourt, Brace and Company, Inc., 1938.

6. Child, C. M.: *Physiological Foundations of Behavior*, New York, Henry Holt & Company, 1924.

7. Ritter, W. E.: *The Unity of the Organism*, Boston, Richard G. Badger, 1919.

8. Wilson, H. V.: *On Some Phenomena of Coalescence and Regeneration in Sponges*, J. Exper. Zool. **5**: 245, 1907.

9. Loeb, L.: *Transplantation and Individuality*, *Physiol. Rev.* **10**: 547, 1930.

10. Morgan, T. H.: *Experimental Zoology*, New York, Macmillan Company, 1907.

11. Cannon, W. B.: *The Wisdom of the Body*, New York, W. W. Norton & Company, Inc., 1932.

12. Wilson, E. B.: *The Mosaic Theory of Development*, Woods Hole, Biological Lectures, 1893.

13. Harrison, R. G.: *Cellular Differentiation and Internal Environment*, in *The Cell and Protoplasm*, Publication 14, American Association for the Advancement of Science, 1940.

14. Conklin, E. G.: *Heredity and Environment in the Development of Men*, Princeton, 1922.

15. Vogt, W.: *Eine Methode lokalisierter Vital-färbung an jungen amphibien Keimen*, München. med. Wchnschr. **26**: 361, 1923.

16. Spemann, H., and Mangold, H.: *Ueber Induktion von Embryonalanlagen durch Implantation art fremden Organisatoren*, Arch. f. Mikr. Anat. u. Entwicklungsgesch. **100**: 499, 1924.

17. Coghill, G. E.: *Anatomy and the Problem of Behavior*, New York, The Macmillan Company, 1929.

of each block apparently is constant, so that the presumption seems justified that this segment of the embryo will develop, for example, into liver, that into heart and another into central nervous system. But then Spemann found that if presumptive abdominal skin from one gastrula was transplanted into the region of the future medullary plate of another the transplanted skin developed into some part of the central nervous system. It is as though the gastrula receiving the transplant forced the transplanted cells into subservience and conformity with the needs of the complete host organism. Still more impressive support for the organismic point of view is found in Coghill's studies of the behavior of *Amblystoma* embryos. He traces the development of body movements from the nonmotile to the adult stage in relation to the growth of the central nervous system. At one point in his argument the following passage occurs: "In like manner, the tissues of the tongue receive branches from motor neurons that are engaged in integrating the trunk long before the tongue has muscle tissue in it. It is, therefore, the potentiality of the functional neuron to grow in embryonic fashion that gives to the organism as a whole its ability to subjugate new parts and thereby maintain its unity during the development of behavior. Such growth of the already conducting neurons accomplishes, then, the primary function of the nervous system, the maintenance of the integrity of the individual while the behavior pattern expands." Jelliffe⁴ has nowhere better displayed his grasp of the forces of growth and development in relation to constitution and the purpose of life than in the following sentence. Discussing Tilney's work on the development of the central nervous system, Jelliffe writes ". . . all of which shows how from the earliest forms the organism grew in response to future opportunities."⁴

Implicit in such observations of growth plan and pattern is the notion concerning body image suggested by Schilder¹⁸ and recently supported by Bruch¹⁹ and by Coghill¹⁷ himself. These authors concur in the belief that our bodies—indeed our whole personalities—have grown into images to ourselves of what we believe ourselves to be. "This image is built up in ourselves," writes Schilder, "in accordance with our instinctive attitudes;" while Coghill, the embryologist, considers man as "a mechanism which, within the limitations of life, sensitivity and growth, is creating and operating himself." Moreover, as Bruch points out, obese children, whose clinical problem is one of disturbed nutrition, "derive security satisfaction from the static fact of size alone." My own observations on total personality show that, in their morphology and behavior, peptic ulcer patients, also food problems in a way, are the very opposite of the obese. The ulcer bearer's best hope lies in hard effort, however useless or misdirected, to recapture that security which he first knew in infancy.³

Another interesting illustration of the principle of organismic unity drawn from the fields of immunity and pathology is seen in the recent observations of O. H. Robertson²⁰ on the behavior of pulmonary alveolar epithelium during pneumonia. These cells in health perform the highly specialized function of aiding in the exchange of gases between air and blood. During pneumonia Robertson observed that they take on a vigorous phagocytic action and are largely occupied in

the successful resolution of the pneumonic lesion. It is as though at the call of the organism (or nation) fixed or sedentary factory workers enlisted in the capacity of shock troops for the good of the whole.

ANDRIC AND GYNIC DIFFERENCES

There is still another set of forces within living organisms whose task concerns the complex relationships of individual and race survival. As far as perpetuation is concerned, the erotic phase of sex and the opposing genital apparatus of the two sexes adequately protect mankind from the threat of species extermination. At an earlier stage in the animal phylum, however, this danger was met by the simpler process of division, which resulted in two or more offspring, each an identical replica of the single parent. But with the establishment of bisexual reproduction, elaborate differences arose in body form and physiologic economy, characteristic for each sex. These differences are not limited to the generative organs. But throughout the entire organism, this other, or extragenital, sphere of sex is expressed as a commingling of masculine and feminine characters, known as the mosaic of androgyny.² The andric and gynec components of this mixture are distributed in varying proportion throughout the four panels of personality. The arrangement is present in every individual of either sex and plays an important role in the organism's task of self preservation. Space does not here permit a full discussion of the remarkable circumstance of maleness within the female and femaleness within the male. But it can be said that the pervasive intermixture of those two supposedly opposite biologic qualities is far more definitely and delicately balanced in the protoplasmic field than the split "psychosomatic" concept itself. There are indications now, however, that the andric and gynec differences are not opposite in character but rather covariant with different degrees of fat-muscle ratio and of oxygen consumption rates. In the matter of morphology alone the range of form from andric to gynec and the reverse is very wide.

PERSONALITY

Thus far this discussion has dealt only with the physical and physiologic qualities of protoplasms. But every one is aware that even the most lowly forms project on our consciousness an unmistakable flavor of identity. Concerning his own species, man usually speaks of the effect of this projection as the impact of personality. Moreover, because it imponderably leaps the space between its origin and the observer, we usually designate this force as a psychologic phenomenon. But the direct physical impacts of fistic blows, for example, from Joe Louis, General Tom Thumb or Einstein likewise possess easily distinguishable personal qualities.

It was because of such questions that studies in human constitution have of necessity been extended into the sphere of the psyche. Now this word, which forms the common root of psychology, psychiatry, psychotherapy and the bisecting term "psychosomatic," holds different meanings for many people. In an effort to discover what some of these connotations might be or how many men recognized a similar interpretation of the word "psyche" a questionnaire was sent to a number of physicians in each department at the Columbia-Presbyterian Medical Center. The query was simply "What does the word 'psyche' in relation to disease connote to you." The responses were varied and ranged from intentional absurdities to interested and suggestive

18. Schilder, P.: *Image and Appearance of the Human Body*, Psyche Monographs, no. 4, London, Kegan Paul, French, Trubner & Co., Ltd., 1935.

19. Bruch, H.: *Obesity in Childhood and Personality Development*, Ann. J. Orthopsychiat. 11: 467, 1941.

20. Robertson, O. H.: Personal communication to the author.

thoughts. Indeed, an analysis of them would form an illuminating commentary on the points of view of various general and special workers in medicine and surgery. But a discussion of this questionnaire is not in order here. It must suffice to state the formula which has been long in use at the Constitution Clinic. It follows: "The term 'psyche' in relation to disease connotes that quality which distinguishes a living cell or organism from a dead one. It springs with the first impregnate cell, and from the first division permeates every tissue of the entire creature, just as it vanishes in death. Psyche therefore is the life force. And this vitality is manifest only through protoplasmic response to outward or inner stimuli. Hence, in conjunction with innumerable agents of environment, the vivified or psychified protoplasm becomes one of the two essential factors which together produce different aspects of health and disease."

If we accept this definition of 'psyche', then there remains no question of the unity of the organism. We can only envision different tissue protoplasms all imbued with the same vitality interacting with one another, and the various tissues and organ systems responding in harmonious synergy to achieve whatever objective at the moment best serves the need of the individual animal itself, of which they all are parts. Any disturbance of this animated accord becomes the gateway to sickness.

That such disturbances find different expressions in different individuals who are afflicted with the same disease is well known. Thus, from time to time in acute rheumatic fever one sees a variety of manifestations in addition to the classic fever, red swollen painful joints and elevated sedimentation rate. Dermatitis marginata, for example, is a well recognized form of eruption in the disease, but it does not occur with great frequency. In those individuals who do display it, however, it must be looked on as a special constitutional criterion of that person which includes dermal cells in the organismic reaction to the impact of the rheumatic agent. That such selective tissue-cooperation responses are definitely genetic functions of cellular protoplasms is well shown by Webster's²¹ recent demonstration of the heritability of mouse brain susceptibility to the encephalitic virus.

MULTIPLE AILMENTS

In the field of internal medicine it is commonest to see patients who are subjects of one disease at a time. So that instead of the usual formula "Bill Smith 'has' pneumonia" we could perhaps more properly say "Bill Smith is partly or pretty much all pneumonia today." But there are a good many instances in which an individual patient may appear to be the subject of multiple ailments. These remarkable phenomena seem to demonstrate more forcibly than theoretical discussion the complex unity of human organism; a unity existing not only within the being of each one but also of that one within the time-spanning unity of the protoplasmic phylum.

In illustration of the foregoing notions, the following cases from the clinic are presented. The first, a married woman of 63, complained of small lumps on her face and body. The dermatologists told her they were subcutaneous fibromas which were inherited, "like birth marks." The only therapeutic offering was surgical excision. But as there were some two hundred of

the objects scattered over her body, she decided against this procedure. Incidentally, she asked at the time what could be done to relieve various other ailments. These included double ptosis of the eyelids, a curious redundancy of the scleral conjunctiva, fibroma of the uterus, mild diabetes, arteriosclerosis and occasional pain in the heart. The latter was interpreted as due to the coronary disease which eventually killed her. She was referred for each of these maladies to its appropriate special clinic, where in each instance the best treatment for that particular "disease" turned out to be unavailing. The explanation for such consistent failure, however, was found by a careful investigation of the woman's family history. It turned out that a condition of excessive overgrowth of mesodermal fibrous tissue was heavily sprinkled through the three generations studied.

The second patient, a married woman of 55, came to the hospital in a seriously ill condition. There had been a steady weight loss of 44 pounds (20 Kg.) in four years, increasing dyspnea for six months and dependent edema for four weeks. Salient points in her history were that she had insufficient food for four years as the result of economic pressure; eighteen months before admission she had developed sore throat, hoarseness and severe paroxysmal cough; recently her doctor told her that she had heart trouble; she brooded over money matters and expressed grave disappointment about her son's failure in life, and especially over his unfortunate marriage to a girl she could not tolerate.

The physical examination revealed a distraught, dyspneic woman, with rapid, overacting, totally irregular heart. The latter was slightly enlarged to the left, and there was an apical murmur. The liver edge was palpable. There were facial skin lesions of erythema multiforme. The laboratory findings proved a considerable degree of anemia; an electrocardiogram showing auricular fibrillation, a basal metabolic rate of +57, a normal sedimentation rate and a 4 plus flocculation test (Hanger).

Tentative diagnoses of thyrotoxicosis, rheumatic heart disease, vitamin deficiency and liver damage were made. But later on the picture changed so that there emerged from the complex symptomatology a clearcut pattern of hyperthyroidism. Although at first the surgical risk was not too good, the patient's response to iodine justified operation at the end of two weeks. At this time she was greatly improved, apparently as the result of hospitalization, massive vitamin intake, high caloric diet, iodine therapy and growing sense of security. No attempt had been made to assist in the resolution of her daughter-in-law conflict.

In the first of these cases one is forced to the conclusion that a genetic fault in tissue growth prevented successful interaction within the internal environment—that is, the effect of cell upon cell. It is hard to conceive that the various symptom complexes—or diseases, if you will—could each have been due to a separate reaction between psyche, in the sense of morbid energy in the unconscious, and soma. Diabetes is well known to number emotional stimuli among its etiologic factors. In this case perhaps pinching of the islands of Langerhans by inherited excessive fibrous tissue may have played an important part in the curtailment of insulin supply. It is interesting, moreover, to observe that the basic lesion in this instance did not directly involve cells of physiologically active tissue. The parenchyma was mechanically reduced in efficiency by a slow-moving tissue, whose only evidence of vitality

21. Webster, L. T., and Johnson, M. S.: Comparative Virulence of St. Louis Encephalitis Virus Cultured with Brain Tissue from Innately Susceptible and Innately Resistant Mice, *J. Exper. Med.* 74: 489, 1941.

was its capacity for growth. What the effect of the attendant miseries were on this woman's emotional patterns is perhaps suggested by the vanity reaction to facial papillomas, and the sense of frustration dependent on her physiologic handicaps.

In the second case, on the other hand, the main disturbance was in the parenchymal cells of thyroid, heart, liver and perhaps digestive mucosa. These are all directly controlled by the autonomic nervous system and respond intensely to swift waves of fear, anger, jealousy. Signs and symptoms which arise from dysfunction of such labile tissue tend to change rapidly as the functional success or failure of the involved cells varies. Consequently, even at the end of but two weeks the patient had begun to gain weight, the electrocardiogram had returned to normal and her facial expression clearly displayed greater organismic placidity. But we are as yet unable to determine the precise patterns of interaction between the energy called emotion, the energy of the chemical substance called thyroid hormone and the energy of the active cells of heart muscle, gastrointestinal mucosa, liver and thyroid gland, from which her symptoms seem to have arisen. We do know, however, that the conflicts underlying this woman's adjustment to her life still go untreated.

Biologists would look on the multiple ailments displayed by each of these women as organismic phenomena; the latter would represent disturbances of relationship within the organism between all the different protoplasms; and these in turn would express the success or failure of both phylogenetic and ontogenetic ambitions. In the first case it would seem that better breeding, a long term preventive measure, would have held the only solution to her predicament. In the second case, on the other hand, it might be contended by psychiatrists that appropriate psychotherapy could have exorcised her demons. But her heart muscle tissue was already damaged and at the danger point, so that speed for its protoplasmic relief was of the essence. That is why a kind of material therapy appropriate to the presenting state of organismic pathologic change was used immediately. Later on, perhaps, some formal psychotherapy may be profitably added. But in any event the success of all-embracing organismic treatment will depend on wisdom and skill in the choice of sequence and emphasis on method. Some of the newer advances in organismic treatment are illustrated by shock therapy.²² Ever since the early use of insulin in dementia precox the powerfully reorienting influence of protoplasmic convulsion on abnormal emotional states has been studied with increasing interest. Now that the electric shock has almost supplanted insulin, the results of such treatment for "psychic disease" have become more and more impressive. Indeed, in some cases the method seems able to accomplish in the twinkling of an eye, through effects on a wide variety of protoplasms, what many months of psychotherapy barely achieve at great cost in money, time and mental anguish for the patient. The phenomenon again supports the biologic concept of living protoplasms in continuity subserving an integrated and vital whole.

ORGANISMIC UNITY

In our current professional phrasing we are by now, no doubt, inexorably committed to the word psychosomatic. The precariousness in the use of the term, however, lies in the fact that its hoped for symbolic

connotation of unity may be lost in the false belief that two separate parts in man actually do exist. Consequently, if we examine closely the structure of organismic unity which doctors nowadays seem to be striving so hard to preserve for the individual we may find perhaps that its division resides in a contemporary medical attitude and not within the animal at all.

620 West 168th Street.

SPLENECTOMY IN PREGNANCY COMPLICATED BY THROMBOCYTOPENIC PURPURA HEMORRHAGICA

REPORT OF A SUCCESSFUL CASE, WITH A REVIEW OF THE LITERATURE

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The patient who is the subject of this report was referred to me by Dr. M. S. Joelson when she was in her sixth month of gestation. Her chief complaints were those of widespread ecchymoses, epistaxis, hemoptysis and hematuria. Various consultations were held, a diagnosis of thrombocytopenic purpura hemorrhagica was established, and splenectomy was performed by me in the eighth month of gestation. She was delivered normally of a normal baby by Dr. Joelson about two weeks prior to estimated term. I believe this is the first case to be reported of splenectomy in pregnancy complicated by thrombocytopenic purpura hemorrhagica.

The seriousness of this complication of pregnancy is attested by the literature. Sixty-one cases have been reported singly or summarized in groups between 1867 and 1936. Mosher¹ in 1923 reported a case of his own and collected 39 other cases. He concluded that the complication of thrombocytopenic purpura hemorrhagica in pregnancy was harmful in that it was usually associated with premature delivery in the sixth or seventh month of gestation, that infection was usually superimposed on it, that the fetal mortality was 50 per cent and that the maternal mortality was nearly 100 per cent from postpartum uterine bleeding.

Of the 47 cases collected by Rushmore² in 1925 the final results with respect to the mother were recorded in 44. Of these, 26 mothers died (58 per cent). Of the 42 cases in which the final results for the infants were recorded, 27 infants died (64 per cent). Rushmore cited Puech's case in which the mother went into labor in the sixth month of gestation. Uterine bleeding continued following delivery, and the patient died from exsanguination on the second day of the puerperium.

Liebling³ in 1926 added a case in which the platelet counts were as low as 20,000, were not associated with splenomegaly, and both the mother and the infant recovered after delivery; the infant as well as the mother was affected. Mosher¹ stated that the offspring was not usually affected but was in the case he reported.

That congenital thrombocytopenic purpura hemorrhagica does occur and that it may be responsible for the infant's death in utero or within two weeks after

22. Nolan, D. C. L.: The Present Status of Shock Therapy of Mental Disorders, *Bull. New York Acad. Med.* 19: 227, 1943.

1. Mosher, G. C.: The Complication of Purpura with Gestation, *Surg., Gynec. & Obst.* 36: 502 (April) 1923.

2. Rushmore, S.: Purpura as a Complication of Pregnancy, *Am. J. Obst. & Gynec.* 10: 553 (Oct.) 1925.

3. Liebling, P.: Purpura in Pregnancy, *Am. J. Obst. & Gynec.* 11: 847 (March) 1926.

delivery is attested by Sanford, Leslie and Crane,⁴ who reported a case in which the mother and infant also recovered after delivery. Siegler⁵ added 12 cases to those of Rushmore,² making a total of 59 cases collected between 1867 and 1931, and added a case of his own in which the mother recovered but the infant died on

TABLE 1.—Blood Counts

Observation*	Date	Platelets	R. B. C., Hemoglobin †			Comment
			W. B. C.	Millions	globlin †	
1	9/19/40	.....	13,700	2.870	50%	
2	9/21/40	130,000				
3	9/28/40	.....	21,550	3.690	60%	
4	9/ 3/43	97,000	.....	2,720	10.5	
5	9/23/43	110,000	8,050	2.380	10.5	Before 3 transfusions
6	9/28/43	60,000	7,200	4.090	61%	See table 2
7	10/19/43	89,300	10,900	3.190	12.0	
8	10/23/43	111,000	8,400	3.020	9.5	Before 3 transfusions
9	10/27/43	Splenectomy. Spleen weighed 1,060 Gm.				
10	10/28/43	120,000	15,900	3.720	12.0	
11	10/29/43	150,000	15,250	4.220	13.5	
12	10/30/43	230,000	11,750	3.860	12.5	
13	11/ 1/43	240,000	12,350	3.750	12.5	
14	11/ 4/43	390,000	12,450	3.760	12.0	
15	11/ 8/43	580,000	12,150	3.580	11.5	
16	11/29/43	Delivered normally of a normal girl infant which weighed 5 lbs. 1½ oz. (2.63 Kg.)				
Mother's.....		510,000	16,000	3.810	11.5	Postpartum count
Infant's.....		420,000	16,800	5.290	17.0	

* Observations 1 to 3 made at Paterson General Hospital. Observations 4, 5 and 7 to 16 at the Barnert Hospital.
† Hemoglobin stated in milligrams per hundred cubic centimeters unless otherwise stated. Bleeding time varied on various occasions from 1½ minutes to 12 minutes. Coagulation time varied on various occasions from 5 minutes to 11 minutes. Clot retraction was reported on various occasions as being slight, no retraction after one hour, to good retraction after twenty-four hours. Tourniquet test was reported positive on the one occasion it was tried (see table 2).

the fourth day after delivery. "probably of purpura hemorrhagica," this diagnosis being based on the fact that blood was found in the spinal fluid. Necropsy of the infant was not performed.

Conti⁶ in 1933 reported a very dramatic case, with complete necropsy findings in both mother and fetus, in which splenectomy was recommended but refused by the patient. The patient suffered from severe hematuria and epistaxis. Conservative measures such as hemostatic injections and transfusions were of no avail. Just prior to death the patient suffered from amaurosis, delirium, tonic and clonic convulsions and bradycardia (pulse 52). A lumbar puncture disclosed blood in the spinal fluid.

Splenectomy in the treatment of this complication of pregnancy is suggested by Williams.⁷ Titus⁸ devotes several paragraphs to this condition and states "I have seen only 1 case of typical purpura hemorrhagica early in pregnancy, but I am impressed by the suggestion that certain fulminating types of premature separation of the placenta seem to have a definite relationship to this rare disease." It is his opinion that interruption of pregnancy will not arrest the purpuric condition. It will merely open another avenue of bleeding.

Recent opinion among hematologists, as attested by their recommendations in the case herein reported, favors splenectomy when pregnancy is complicated by thrombocytopenic purpura hemorrhagica.

4. Sanford, H. N.; Leslie, E. I., and Crane, M. M.: Congenital Thrombocytopenia, *Am. J. Dis. Child.* 51: 1114 (May) 1936.
5. Siegler, S. L.: Purpura Hemorrhagica Complicating Pregnancy, *M. Rec.* 139: 189 (Feb. 21) 1934.
6. Conti, F.: Purpura in Pregnancy: Fatal Episode with Fetal Manifestations, *Rassegna internaz. di clin. e terap.* 14: 450 (May 31) 1933.
7. Williams, J. W.: *Obstetrics*, ed. 6, New York, D. Appleton-Century Company, Inc., 1930, p. 611.
8. Titus, P.: *The Management of Obstetric Difficulties*, ed. 2, St. Louis, C. V. Mosby Company, 1940, pp. 202-203.

REPORT OF CASE

History.—A white secundigravida aged 29 complained on Aug. 31, 1943 of ecchymoses, epistaxis, hemoptysis and hematuria. The duration of these symptoms was five years, but they had become more severe in the past month. It was estimated that she was in her sixth month of gestation at this time and that she should deliver about December 7.

The patient had been married five years, and her first pregnancy was induced prematurely in the eighth month of gestation at another hospital. Reference to the chart at this hospital (the Paterson General Hospital) indicates that the patient delivered a normal infant on Sept. 27, 1940. She had received two blood transfusions, one before and one after delivery. The blood counts taken at this time are recorded in table 1. She was discharged October 8 with a final diagnosis of pregnancy (delivered), bilateral hydronephrosis, infection of the right kidney, secondary anemia, systolic murmur and purpura hemorrhagica. The patient was advised at this time to have a splenectomy performed and not to have any more children.

The father, aged 52, had a heart attack a few years before and was now in fair health. The mother, aged 54, had had two attacks of cerebral thrombosis, which had affected her speech. Two aunts died of tuberculosis. One grandfather died of carcinoma of the stomach.

The patient suffered from a severe attack of measles, whooping cough, several attacks of tonsillitis and rheumatic fever in childhood. She had had no serious illnesses since then until five years before, when her present illness began with the appearance of ecchymoses and bleeding gums. Tonsillectomy was performed at the age of 14. At the age of 23 appendectomy was performed by Dr. Jesse H. York of Atlanta, Ga. Dr. York informed me that there was no evidence of thrombocytopenic purpura hemorrhagica at that time.

TABLE 2.—Dr. Nathan Rosenthal's Report of Sept. 28, 1943

Blood count	
Hemoglobin.....	61%
Red blood count.....	4,090,000
White blood count.....	7,200
Platelets.....	60,000
Myelocytes, neutrophils.....	2%
Polymorphonuclears, nonsegmented.....	24
Polymorphonuclears, segmented.....	40
Polymorphonuclear eosinophils.....	1
Lymphocytes.....	24
Plasma cells.....	2
Monocytes.....	7
Bleeding time.....	12 min.
Coagulation time.....	11 min.
Tourniquet test.....	Positive
Clot retraction.....	Slight
Bone marrow	
Nucleated cells.....	720,000
Megakaryocytes.....	3,200
Myeloblasts.....	3%
Promyelocytes, neutral.....	3%
Myelocytes, neutral.....	37%
Polymorphonuclears, nonsegmented.....	33%
Polymorphonuclears, segmented.....	6%
Hematogones.....	6%
Lymphocytes.....	2%
Plasma cells.....	1%
Erythroblasts.....	2%
Normoblasts.....	8%

"The bone marrow is markedly cellular, possibly a result of continued bleeding from time to time. The megalokaryocytes are increased and show very little tendency to maturation, typical of thrombocytopenic purpura."

The patient is group A, Rh positive.

Physical Examination.—The weight was 123 pounds (61.2 Kg.), the blood pressure 130 mm. of mercury systolic, 80 diastolic, the pulse rate 96, the heart without murmurs, not enlarged, and regular in rate and rhythm. The urine was devoid of albumin and sugar. Table 1 gives the series of blood counts taken. The positive physical findings were gestation of five and a half months, splenomegaly and widespread ecchymoses.

A diagnosis of pregnancy complicated by thrombocytopenic purpura hemorrhagica was made at this time, and immediate splenectomy was recommended and refused.

On September 28 the patient was referred to Dr. Nathan Rosenthal of New York for a hematologic study and for recommendations as to treatment. Table 2 gives the blood and bone marrow findings. He recommended splenectomy and sterilization of the patient "as soon as possible."

At the patient's request, Dr. Rosenthal's and my reports were sent to Dr. York, who in turn consulted Dr. Roy R.

Splenoma is a rare pathologic entity in which the function of the organ is not usually disturbed. Pool and Stillman¹¹ cite Foà, who in 1920 described a splenoma the size of an orange. Sweet¹² in 1942 reported the occurrence of splenoma in a woman of 59 who had had no serious illnesses. She had been married thirty-eight years and had had thirteen children and four miscarriages. Eight of the children died in infancy. Her blood count, including the platelet count, was normal. Sweet collected 7 other cases from the literature. In all these the only symptoms were those due to splenomegaly. My own case, herein reported, is unique in that some areas of the splenoma were necrotic, the blood picture was that of essential thrombocytopenic purpura hemorrhagica and pregnancy was superimposed.

Thrombocytopenic purpura hemorrhagica is a very serious complication of pregnancy. Several authorities are of the opinion that, as soon as it is established that the condition is due to splenic dysfunction, splenectomy is the treatment of choice.

SUMMARY

A case of pregnancy complicated by thrombocytopenic purpura hemorrhagica was successfully treated by splenectomy

in the eighth month of gestation. A large splenoma, with areas of necrosis, was found.

The patient was delivered normally of a normal infant about two weeks prior to estimated term.

555 East 27th Street, Paterson 4.

Clinical Notes, Suggestions and New Instruments

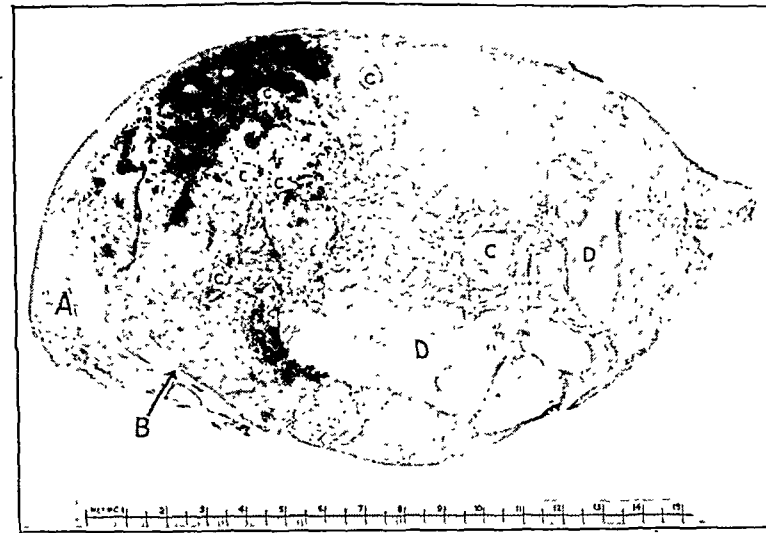
RETROPERITONEAL CAVERNOUS HEMANGIOMA

MAX MILLMAN, M.D., SPRINGFIELD, MASS.

Retroperitoneal hemangiomas large enough to have any clinical significance are so rare that practically no mention of the condition is made in standard textbooks on pathology. However, Stout¹ in his volume on human cancer cites 2 instances, 1 a case of retroperitoneal hemangioma which was mistaken for a kidney, as reported by Harris, and the other a recurring lipoma which had areas of cavernous hemangiomas in it as described by Hilse. Of the few additional cases found elsewhere in the literature almost all are of renal origin. The present case of retroperitoneal cavernous hemangioma is presented because of its large size, its extrarenal origin and its rather unusual clinical picture and course.

REPORT OF CASE

I. K., a man aged 32, married, a hardware clerk, presented himself in September 1939 complaining of generalized abdominal pains of six months' duration. His family and past histories were noncontributory. He had always enjoyed excellent health until the onset of the present illness. The pain was dull, inconstant and fairly well generalized, although somewhat worse in the left side of the abdomen, especially when the patient was in the reclining position. It was not related to food intake



Cross section of the spleen showing how the splenoma almost completely displaced the normal splenic tissue (A), the limiting connective tissue membrane of the splenoma (B), various grayish yellow nodules (C) and the large areas of necrosis within the splenoma itself (D). Only a comparatively small amount of normal splenic tissue was present at each pole.

Kracke, professor of pathology of Emory University. Dr. Kracke wrote Dr. York ". . . The problem is one of immediate management of this patient. . . . It is like trying to repair the leak in the roof while it is raining. . . . I think the best thing to do is to go ahead with splenectomy at once. . . . I don't advise sterilization in this case, since splenectomy should cure the disease."

On October 27 splenectomy was performed by me at the Barnert Hospital with the patient under a general ether anesthesia administered by Dr. H. M. Stein. The patient received 500 cc. of citrated whole blood on each of the three days prior to operation. She received 250 cc. of pooled human plasma during the operation and 500 cc. of citrated whole blood immediately after the operation.

The spleen weighed 1,060 Gm. Because it did not have the appearance usually associated with thrombocytopenic purpura hemorrhagica of the so-called idiopathic or essential type, I did not sterilize the patient.

The pathologic diagnosis (by Lieut. Jacob Churg, in collaboration with Dr. Paul Klemperer) was agnogenic myeloid metaplasia of the spleen; large "splenoma" with areas of necrosis.

On November 8 the patient was discharged, recovered, on the twelfth postoperative day.

On November 29 Dr. M. S. Joelson delivered the patient normally of a normal female infant which weighed 5 pounds 4½ ounces (2.63 Kg.). The mother was discharged one week later. The infant was taken home Dec. 22, 1943, after an epidemic of influenza in the household had subsided.

COMMENT

Splenectomy in pregnancy has been reported several times. Sutton⁹ in 1901 reported the removal of a prolapsed spleen in the second month of pregnancy, which would have given rise to serious dystocia at the time of labor had it remained in situ. Serbin¹⁰ in 1937 reported 3 cases of splenomegaly in pregnancy treated by splenectomy.

9. Sutton, J. B.: The Surgery of Pregnancy and Labour Complicated with Tumors, *Lancet* 1: 382, 452 and 529, 1901.

10. Serbin, W. B.: Splenomegaly in Pregnancy, *Am. J. Obst. & Gynec.* 34: 456 (Sept.) 1937.

11. Pool, E. H., and Stillman, R. G.: *Surgery of the Spleen*, New York, D. Appleton and Company, 1923, p. 272.

12. Sweet, R. H.: Hamartoma of the Spleen: Report of a Case, *New England J. Med.* 226: 757 (May 7) 1942.

1. Stout, A. P.: *Human Cancer*, Philadelphia, Lea & Febiger, 1932, p. 244.

and was not relieved by alkalis or laxatives. There was no constipation or diarrhea. The appetite had remained good and there was no loss of weight. There were no symptoms referable to the cardiorespiratory or genitourinary systems.

The patient was well developed and well nourished. Abnormal findings were not present except for a large, smooth, nontender, fairly firm mass filling all of the right lower quadrant of the abdomen and extending into the right upper quadrant, where it gradually disappeared. It did not move with respiration and did not appear to be attached to the liver. The lateral border of the mass could be made out fairly well, and this was smooth in outline. The medial border, however, was less clearly defined. The blood and urine examinations were normal. The blood Hinton test was negative. X-ray examination of the chest did not reveal any abnormal findings. An intravenous pyelogram showed nothing abnormal in the kidneys or ureters. A barium sulfate enema (fig. 1) showed the cecum and ascending colon displaced obliquely as far as and even somewhat beyond the midline.

On Nov. 8, 1939 the patient was operated on, at which time a large pyramidal, hemorrhagic mass about the size of a large pineapple was found resting on the right iliopsoas muscle. The mass was soft, spongy and covered anteriorly by a thin capsule. It bled freely, and by the time it was removed it had shrunk in size considerably as the result of extravasation of blood. It was adherent quite firmly to the fatty retroperitoneal tissues as well as to the inferior part of the iliopsoas muscle. The ureter, kidney and adrenal gland were free.

The patient made an uneventful recovery from the operation. Following his discharge from the hospital he was given a series of high voltage roentgen treatments. He has since remained in excellent health. A second barium enema done



Fig. 1.—Displacement of cecum and ascending colon.

six weeks after operation showed the cecum and ascending colon to be in the normal position (fig. 2).

Microscopic examination of the tumor revealed the characteristic pattern of cavernous hemangioma. Here and there, and especially at the periphery, small amounts of fatty tissue were to be seen. The normal lobulation of fat, however, was absent.

COMMENT

The presence of fatty tissue in this tumor raises the question as to its exact origin. In Hilse's case, because of its recurrent nature, it was known that it originated as a lipoma, which later developed into a hemangioma. In our case, however, such proof is lacking. In some of the so-called cavernous

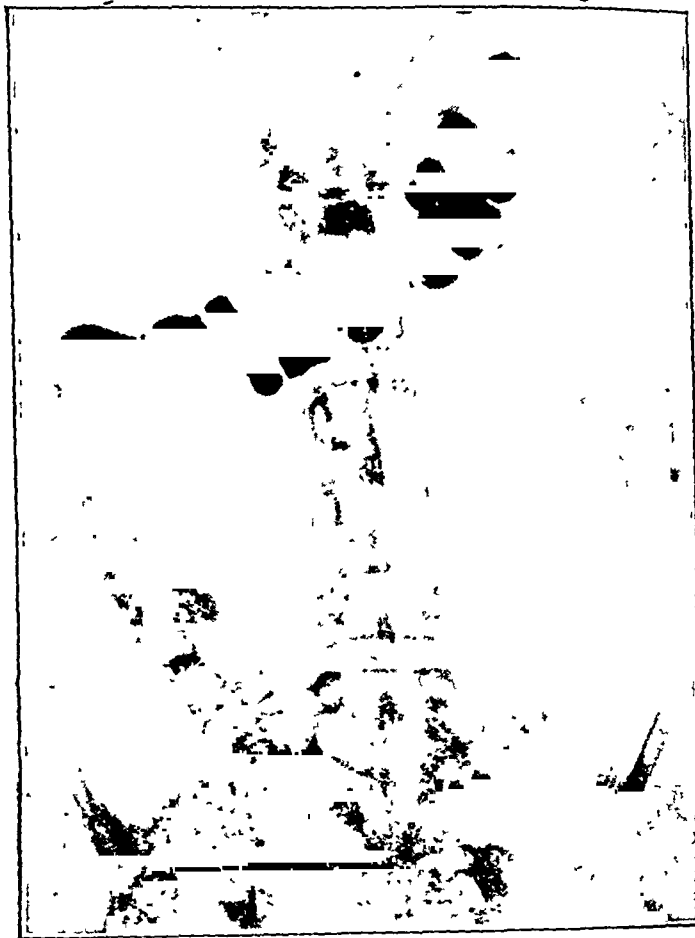


Fig. 2.—Normal position of cecum and ascending colon.

lipomas the extensive overgrowth of blood vessels may at times make it difficult to distinguish between vascular lipoma and hemangioma. However, the amount of fat in this case was too small to warrant a diagnosis of cavernous lipoma. The course of roentgen treatments was given for the purpose of preventing a possible recurrence.

14 Maple Street.

ZINC PEROXIDE—A NEW DRUG FOR RAPIDLY CURING THE SWOLLEN PREPUCE

GORDON G. ALLISON, M.D., ATLANTA, GA.

Zinc peroxide (ZnO_2) is a light, white, slightly irritative, pungent, astringent, bacteriostatic powder. Unstable in water suspensions, it readily loses part of its oxygen. This zinc compound has been employed in the City Venereal Disease Clinic in over 400 cases.

Zinc peroxide was used particularly in treatment of those venereal diseases producing ulcerative lesions of the male genitals, namely syphilis, chancroid, granuloma inguinale and fusospirochetosis. The multiple and simultaneous occurrence of several of these gives rise to a swollen, nonreducible foreskin. Usually the fusospirochetes enter the picture or invade the soil and enhance the damage to the conclusion of gangrene. Those physicians in the South who deal with the Negro draftees and enlistees are all cognizant of the large number of such cases, of the urgency of prompt treatment and rapid response, of the need of prompt diagnosis and of the usual slow response or failure of ordinary measures. The use of zinc peroxide shortens the disability period, lessens pain, permits an earlier diagnosis and lowers the cost of medical care.

Inquiry into the conditions necessary for the development of a swollen edematous prepuce reveals that primarily there must be a congenital redundance to which, secondly, is added

a narrowed tip or lumen, hardened, scarred or fibrosed by former trauma or a chronic balanitis. The third factor of an active venereal infection is one far from simple; all six venereal diseases may be contributory in the pathology. Gonorrhea, syphilis, chancroid, lymphopathia, granuloma inguinale and fusospirochetosis have been found responsible; rarely one, most commonly two or three and less frequently four, five

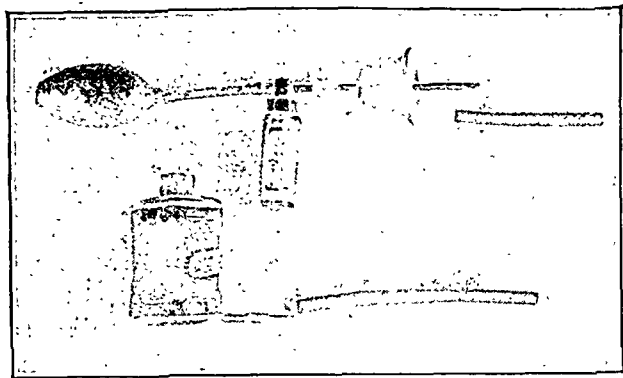


Fig. 1.—Apparatus for administering zinc peroxide.

or six are present under the same foreskin. Also various pyogenic organisms, the trichomonads and many nonpathogenic bacteria are oftentimes added to the infection.

Although the desire to reduce the swelling is paramount, one must also make a diagnosis of the venereal entity. Smears for gonorrhea, chancroid and fusospirochetosis are made at the first visit. Kahn, Frei and Ducrey tests are likewise performed. Usually the genital ulcer is visualized. The margin observed is cleaned and scraped, and a dark field examination of the serum is made. If the lesion cannot be seen, the dark field examination is postponed until swelling disappears and the foreskin can be retracted. By way of comment, it may be said that the dark field examination is frequently of no value because (1) the patient has treated himself with various drugs, and (2) if a chancre is present it is usually rather old and the spirochetes cannot be demonstrated; hence a Kahn test is usually positive at this time.

When four or five of the venereal diseases have been diagnosed in this way, treatment is begun; and after the prepuce can be retracted a small specimen for biopsy is obtained and



Fig. 2.—Method of introducing zinc peroxide.

the Donovan bodies searched for in this tissue. A second dark field examination is then made.

The method of treatment is simple. A piece of rubber tubing is attached to a powder blower or insufflator. Zinc peroxide powder is placed in the glass receptacle. The open end of the rubber tube is placed in the opening of the foreskin, and the skin is firmly held against the rubber tube. By vigorous

compression of the bulb, the powder is forcefully blown about the glans penis and under the foreskin. The secretions moisten the powder and retain it under the prepuce. The patient is instructed not to wash or irrigate himself but to return in two or three days for another treatment.

The results of this method have been most satisfactory. The secretions are immediately lessened, the edema subsides, the induration and swelling disappear, the mucosa and skin become pliant and oftentimes on the next visit the foreskin can be retracted and the underlying pathologic conditions brought into view. The hazard of gangrene and of the loss of the outer third of the penis is dissipated, the need for dorsal slits is eliminated, and, lastly, it is possible to arrive at a complete diagnosis of all the venereal diseases present.

SUMMARY

A method of employing zinc peroxide to relieve a swollen prepuce caused by one or more venereal diseases has been devised. The efficacy of this method has been proved in over 400 cases. Its value is pertinent in these war days to all dealing with enlisted men, draftees and defense workers, particularly those of Negro blood.

301 Grant Building.

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS AND NUTRITION OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

GEORGE K. ANDERSON, M.D., Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (See Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Inc., Canajoharie, N. Y.

BEech-NUT BRAND STRAINED VEGETABLES AND LAMB WITH RICE.

Analysis (submitted by manufacturer).—Total solids 14.29%, moisture (by difference) 85.7%, ash 1.29%, fat (ether extract) 1.05%, protein (N \times 6.25) 2.25%, carbohydrates other than crude fiber (by difference) 9.18%, crude fiber 0.52%, calcium (as Ca) 0.04%, phosphorus (as P) 0.043%, iron total 5.5 parts per million, iron total available 4.8 parts per million, copper 4.1 parts per million.

Calories.—0.55 per gram; 15.59 per ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S CHOPPED VEGETABLES WITH BACON, RICE, AND SOYBEAN FLOUR, a canned chopped mixture of bacon broth, tomatoes, carrots, potatoes, peas, bacon, celery, rice, soybean flour, onions and salt.

Analysis (submitted by manufacturer).—Moisture 90.3%, total solids 9.7%, ash 1.1%, crude fiber 0.3%, fat (ether extract) 0.3%, carbohydrates (by difference) 5.4%, protein (N \times 6.25) 2.6%, calcium (Ca) 16.2 mg. per hundred grams, phosphorus (P) 14.7 mg. per hundred grams, iron (Fe) 4.6 mg. per hundred grams, copper (Cu) 0.13 mg. per hundred grams.

Vitamins.—Thiamine, 0.057 mg. per hundred grams; riboflavin, 0.052 mg. per hundred grams; carotene, 2,500 U. S. P. units per hundred grams.

Calories.—0.4 per gram; 9.9 per ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S STRAINED CHICKEN SOUP WITH VEGETABLES AND NOODLES, a canned strained mixture of chicken broth, potatoes, dressed chicken, carrots, noodles, celery, salt and parsley.

Analysis (submitted by manufacturer).—Moisture 87.8%, total solids 12.2%, ash 1.2%, fat (ether extract) 0.6%, protein (N \times 6.25) 2.4%, crude fiber 0.2%, carbohydrates (by difference) 7.8%, calcium (Ca) 21.5 mg. per hundred grams, phosphorus (P) 20.4 mg. per hundred grams, iron (Fe) 4.8 mg. per hundred grams, copper (Cu) 0.08 mg. per hundred grams.

Vitamins.—Thiamine, 0.026 mg. per hundred grams; riboflavin, 0.047 mg. per hundred grams.

Calories.—0.5 per gram; 13 per ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S STRAINED MIXED VEGETABLES WITH BARLEY AND SOY FLOUR, a canned strained mixture of lima beans, potatoes, peas, green beans, barley, soy flour and celery salt.

Analysis (submitted by manufacturer).—Moisture 84.7%, total solids 15.3%, protein (N \times 6.25) 3.4%, ash 1.2%, crude fiber 0.4%, fat (ether extract) 0.1%, carbohydrates (by difference) 10.2%, calcium (Ca) 19.8 mg. per hundred grams, phosphorus (P) 12.0 mg. per hundred grams, iron (Fe) 4.6 mg. per hundred grams, copper (Cu) 0.4 mg. per hundred grams.

Vitamins.—Thiamine, 0.056 mg. per hundred grams; riboflavin, 0.218 mg. per hundred grams; carotene, 100 U. S. P. units per hundred grams.

Calories.—0.6 per gram; 15.7 per ounce.

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SATURDAY, MARCH 18, 1944

BLOOD GROUPING EVIDENCE

In courts of law any child born in lawful wedlock is presumed to be legitimate, and from the earliest days this presumption of legitimacy has been an extremely weighty one. Under the law of the "four seas" an English court once held that a child born in England was legitimate even though it appeared from the fullest evidence that the husband resided in Ireland during the whole term of his wife's pregnancy and for a long time previously, because Ireland was within the king's domain.¹ In 1907 this grotesque rule was modified, but the presumption of legitimacy has remained a formidable obstacle to scientific progress, as may be gleaned from a recent decision handed down by an English court.²

In a divorce proceeding the husband requested a blood test, which proved that he was not the father of his wife's child. (Both husband and wife belonged to type M, while the child belonged to type MN.) The test is now generally accepted as proof that a certain man could not have been the father of a certain child. In his decision the judge remarked that at first he was inclined to think, *albeit very reluctantly* (italics ours), he was bound in law to accept the result of the blood group test, not because as a man he thought the doctor was right but because as a magistrate he thought the evidence was legally convincing. However, since the legal presumption of a child born in wedlock being legitimate is very strong, he finally decided not to upset it solely on scientific evidence. Evidently this judge preferred the comfort of adherence to tradition.

The reaction of American courts to blood test evidence has been reviewed in a book that has just appeared.³ The problem of paternity arises most frequently in so-called filiation proceedings, less often in divorce actions. In the former the child is born out of wedlock and the mother designates a certain man as father and

an action is started to compel him to support the child. In such cases, when the blood tests prove that the defendant is not the father of the child in question, the courts usually accept this result without hesitation, probably because an illegitimate child is involved. (It is highly significant, that the woman usually confesses to indiscretion with other men besides the defendant after the results of the blood tests are divulged.) In uncontested divorce actions the reaction of the court is likewise favorable. In contested divorce actions, on the other hand, judges apparently prefer to accept the testimony of the wife rather than the objective blood test findings, so that in courts of this country, just as in England, not much progress has been made away from the law of the "four seas."

No doubt the first duty of the court is to see that truth and justice prevail. In the English case cited, the court proudly announced the happy outcome—the husband agreed to make a home for wife and child and accept the child as his own. However, a reconciliation might have been effected without resorting to such subterfuge, because husbands in the past have been known to forgive erring wives and to accept children not their own. When a court refuses to dissolve or annul a marriage of two completely incompatible people, even though there is scientific proof of the wife's deceit or fraud, as has happened in a number of cases in American courts, the court would not appear to be carrying out its responsibilities as an administrator of justice.

ANDREAS VESALIUS AND HARVEY CUSHING: TRADITION AND INSPIRATION

Just as skill in perspective drawing is necessary for proficiency in painting and sculpture, a mastership in anatomy opens the door to all purposeful work in medicine. The period of Galen, emphasizing rational anatomy and physiology as a corrective to even the brightest hippocratic philosophies of form and function, significantly runs synchronously with the highest development in Greek art. Galen's inductive school dominated practically all natural and medical science until the advent of the Renaissance, when medicine, till then a unit, burst into the cluster of component disciplines natural history, physiology, geology, chemistry, physics, astronomy and mechanics. When Vesalius in the sixteenth century instituted the teaching of anatomy by dissections of the human body, the laboratory method recorded its first victory over the didactic. No wonder, then, that the name of Andreas Vesalius took a high place in medical consciousness.

In those early days the study of nature flourished under the wing of medicine. As a reminiscence of that fostering care, the study of the medical sciences now leans on a competent insight into all nature and a knowledge of the methods and results of the former

1. Cited after Swetlow, G.: Blood Grouping—Its Legal Applications, M. Times & Long Island M. J., July 1932.

2. Assessment of Blood Group Evidence, Brit. M. J. 1:134 (Jan. 22) 1944.

3. Schatkin, S. B.: Disputed Paternity Proceedings, Albany, N. Y., M. Bender & Co., 1944.

auxiliary disciplines. For that reason all medical men may be said to enter medicine by an introduction into the natural sciences now known as biology. Many of the greatest medical men have been historically minded. American activity in the history of medicine compares well with similar scholarship elsewhere. An enthusiastic group of physicians have supported it with both international and local studies, receiving loyal aid from capable bibliographers and collectors of medical literature. Nor should those publishers be forgotten who, time and again, took risks in order to stand by the traditions which history and biography try to maintain.

Many will remember the time when medical-biologic libraries of adequate size were scarce enough even in important medical centers in the United States. The progress of our library movement has been effective. Two classes of books are permanently valuable for medical research: periodicals and the classics in all general, special and contingent fields. Library service grew as the books accumulated; local service and countrywide cooperation now are demanded, observed and explored. The spread of bibliographic assistance is an example to all the world. From the Surgeon General's *Index Catalogue* through the *Index Medicus* to the *Quarterly Cumulative Index Medicus*, bibliography has proceeded in a purposeful organization of collective efforts toward the support of medical scholarship.

John Shaw Billings conceived the anatomic analysis of the Surgeon General's Library which now is being continued by the library staff of the American Medical Association. Osler, Welch, Garrison, Crummer, Pilcher, Frank and Cushing, as well as their still surviving spiritual descendants, carried this analysis into the field of critical history by analyzing the contents and significance of known and newly discovered classics. Harvey Cushing pursued bibliologic studies in his scant hours of respite between operations. His latest effort in the field of historical medicine was his work *A Bio-Bibliography of Andreas Vesalius* (New York, Schuman's, 1943). At the age of 29 Vesalius published (1543) his monumental work on human anatomy, with its unexcelled engravings, renowned artistically no less than scientifically, and accompanied by elaborate descriptions, which soon became familiar to every student in every medical group in Europe. The illustrations were copied, reprinted and appropriated by numerous contemporary and later writers. This tradition Dr. Cushing, during forty years of a busy life, traced in full detail, collecting, comparing and defining the influence of Vesalius through the ages. The findings of many other bibliographers were verified and ventilated. As a result the restless life of Vesalius unfolds before us. The reader learns about his book on the China root, his *consilia* (written consultations), his discussions of the findings of Fallopius, his emendations to Galen, his

epistle on venesection, some of these papers being side lights to his major work.

All this constitutes the life of a medical scholar of transcendent influence. This indeed is history. Vesalius is not the only person to whose abilities this book testifies; Harvey Cushing persisted in this work until the pen dropped from his capable hands.

IS ASPIRIN A DANGEROUS DRUG?

Aspirin, or acetylsalicylic acid, has been used in enormous quantities throughout most of the world for some forty-five years. Many persons seem to have a mild idiosyncrasy to this drug or to the other salicylates and consequently avoid its use; the vast majority take it with apparent impunity. Although toxic effects have been discussed in these columns,¹ severe reactions are certainly rare in relation to the enormous quantities consumed. Deaths from aspirin have been reported; these appear to have been more frequent in England than in this country.

New evidence indicates that aspirin and the other salicylates produce a physiologic effect which cannot be ignored. About 1941, Huebner and Link² of the Wisconsin Agricultural Experimental Station discovered that dicumarol when given by mouth induces a shortage of prothrombin in the blood. They found also that dicumarol could be qualitatively degraded to salicylic acid. Later, Link and his co-workers³ tested the action of salicylic acid itself. When single doses of salicylic acid were given to rats kept on an artificial diet which was low in vitamin K, a decrease of the prothrombin in the blood occurred. Also if the salicylic acid was given over a long period, hemorrhages resulted; if vitamin K was administered the hypoprothrombinemia did not develop. More recently other investigators⁴ found that salicylic acid would act in the same way on human beings and that when vitamin K was administered simultaneously with the salicylic acid the fall in prothrombin levels was prevented. The administration of vitamin K after the production of hemorrhage by dicumarol or salicylic acid, however, is of little use.

These observations offer a plausible explanation of such events as the report of a British physician⁵ in 1943 concerning the development of nosebleed in 3 cases after taking large doses of aspirin or the frequent occurrence of bleeding in patients with rheumatic fever who are receiving large doses of salicylates. Such

1. Acetylsalicylic Acid Deaths, editorial, *J. A. M. A.* **115**:1192 (Oct. 5) 1940.

2. Huebner, C. F., and Link, K. P.: Studies on the Hemorrhagic Sweet Clover Disease, *J. Biol. Chem.* **135**:529 (April) 1941.

3. Link, K. P.; Overman, R. S.; Sullivan, W. R.; Huebner, C. F., and Scheel, L. D.: Studies on the Hemorrhagic Sweet Clover Disease, *J. Biol. Chem.* **147**:463 (Feb.) 1943.

4. Meyer, O. O., and Howard, Beryl: Production of Hypoprothrombinemia and Hypocoagulability of the Blood with Salicylates, *Proc. Soc. Exper. Biol. & Med.* **52**:234 (June) 1943. Shapiro, Sherrard; Redish, M. H., and Campbell, H. A.: Studies on Prothrombin. IV. The Prothrombinopenic Effect of Salicylate in Man, *Proc. Soc. Exper. Biol. & Med.* **53**:251 (June) 1943.

5. Honigsberger, M.: *Brit. M. J.* **2**:57 (July 10) 1943.

observations suggest that patients who are required to take salicylates in large quantities for a long time should also receive prophylactic doses of vitamin K. When, however, hemorrhages occur after the taking of dicumarol or the salicylates, vitamin K is not likely to be effective; then proper treatment may include the giving of a blood transfusion.

The mass of evidence so far available indicates that aspirin and the salicylates are among the least toxic of active pharmacopeial preparations. This status, however, should not be interpreted as an excuse for failure to recognize hazards connected with their abuse or even under certain circumstances of established usage. Their ability to produce hemorrhage in some cases appears to be counteracted by early administration of vitamin K. It does not now seem necessary to administer vitamin K to all patients receiving salicylates; those who are to receive large doses for a long time may appropriately be given vitamin K.

Current Comment

PNEUMONIA IN THE SHIPBUILDING INDUSTRY

The United States Maritime Commission calls attention to the observations of Collen, Dybdahl and O'Brien that welders are no more prone to respiratory disease than other shipyard workers. In the twelve month period from September 1942 to September 1943 864 patients with pneumonia were treated at the Permanente Foundation Hospital, Oakland, Calif. The diagnosis of pneumonia was substantiated in every case by a positive roentgenogram of the chest. Questionable cases of "minimal" pneumonia, "pneumonitis" or similar indefinite diagnosis were not included in this series. Patients with pneumonia as a contributory diagnosis to another illness were excluded. A study of the epidemiology of pneumonia at the shipyards indicated that the annual frequency rate of pneumonia was 9.5 per thousand workers. Available data did not indicate that the rate of incidence or type distribution of pneumonia were different among shipyard workers than in the general population. Workers who had recently migrated to this area from other states were no more susceptible to pneumonia than those who have lived in this region for a long time. The incidence rate of pneumonia was found to be independent of the length of employment. There was no relationship between the incidence of pneumonia and occupation. Since pneumonia is commonly accepted as an index of both the seriousness and the general occurrence of severe respiratory illness, it is important to the steel fabrication industry in general and especially to the shipbuilding industry that these observations be known. Complete details are available from the Division of Shipyard Labor Relations, U. S. Maritime Commission, Washington, D. C.

MORE ELECTRICAL TRANSCRIPTIONS FOR RADIO PROGRAMS

On page 784 of this issue of THE JOURNAL is an announcement of electrically transcribed radio health broadcasts available through the Bureau of Health Education. This project was authorized by the Trustees for experimental development in 1942. Since that time three series of electrically transcribed programs have been made available and a fourth is in process of development. These electrical transcriptions are in the form of interviews with physicians of the headquarters staff of the American Medical Association, who are interviewed by women broadcasters. In view of the reduced membership of local medical societies owing to the war situation, the maintenance of radio broadcasting service in local communities has become impossible on a normal basis. The use of radio scripts furnished by the Bureau of Health Education for many years has dwindled sharply because of the lack of physicians in local communities to organize and maintain a broadcasting service. Electrically transcribed radio health broadcasts now available can be used in local communities with a minimum of time and effort by local physicians and county medical societies. In many instances all necessary arrangements can be made by the Woman's Auxiliary. No matter at what time of day the radio station makes time available, the transcription is always ready. Local medical societies, health departments, voluntary health agencies or any reputable local group may have these transcriptions, subject to approval by the local medical society, without cost except for the nominal expense of returning the records. Already these transcriptions have been lent more than fifty times and have served in more than twenty-five communities. Many of the sets of records that have been lent will be returned to the Bureau soon and will be available again for use.

PREVENTION OF VENOUS THROMBOSIS

The discovery that dicumarol reduces the prothrombin titer of circulating blood¹ stimulated the hope that this active principle of sweet clover toxin might be useful in the prevention or cure of venous thrombosis. This hope was strengthened by preliminary tests which showed that lethal doses of this toxin reduced the incidence of experimental thrombosis in dogs. Dale and Jaques² administered 10 mg. of dicumarol per kilogram intravenously to a number of dogs and sixty hours later crushed their radial and saphenous veins with linen thread. Two and one-half hours after removal of the ligatures 60 per cent of the injured veins were found free from thrombi, as contrasted with a 100 per cent involvement in their nonintoxicated controls. Richards and Cortell³ gave 4 dogs lethal oral doses of dicumarol (25 mg. per kilogram) daily for three to five days and then attempted to produce thrombosis by injecting

1. Link, K. P., and others: J. Biol. Chem. **136**: 47, 1940; **138**: 1, 21, 513, 1941; **142**: 941, 1942.
2. Dale, D. N., and Jaques, L. B.: Canad. M. A. J. **46**: 546, 1942.
3. Richards, R. K., and Cortell, R.: Proc. Soc. Exper. Biol. & Med. **50**: 237, 1942.

monoethanolamine oleate into isolated loops of their radial and saphenous veins. Six to ten days later the veins were examined microscopically. Thrombi were absent in 10 of the 12 sclerosed veins of the dicumarol intoxicated dogs, while thrombi were found in 11 of 14 sclerosed veins in their nonintoxicated controls. Thill and his associates⁴ of the University of Wisconsin, using the same sclerosing method, tested the prophylactic efficiency of a single safe therapeutic dose of dicumarol. Each of a series of 15 dogs was given 5 mg. of dicumarol per kilogram orally in a gelatin capsule, 15 untreated dogs being used as controls. Two days later the average prothrombin time was twenty minutes in the dicumarol treated dogs as contrasted with six minutes prothrombin time in their untreated controls. Monoethanolamine oleate (0.25 cc.) was then injected into a 3 inch isolated segment of each radial vein of the 30 dogs. Three minutes later the finger compressions above and below the isolated segments were removed and the sclerosing agent permitted to enter the general circulation. Six to nine days later the segments were studied microscopically. In the 15 untreated controls 17 (56.6 per cent) of the 30 sclerosed veins showed thrombi. Only 6 (20 per cent) of the 30 sclerosed veins showed thrombosis in the 15 dicumarol treated dogs. The incidence of experimental thrombosis was therefore reduced over one half as a result of a single therapeutic dose of dicumarol. This dose is equivalent to the amount that can be safely administered to man. Neither postoperative hemorrhage nor other deleterious effects were noted as a result of administration of dicumarol in this dosage.

DIAGNOSIS OF SUBDURAL HEMATOMA IN CHILDREN

The need for early diagnosis and prompt treatment of subdural hematoma in children cannot be overemphasized. By restricting the rapid expansion of the brain which occurs at this age period and by interfering with the blood supply and cerebrospinal fluid circulation, subdural hematoma impairs the development of cortical functions and leads to degenerative and atrophic changes of the brain. Cortical atrophy, optic atrophy, extensive paralyzes and mental deterioration are some of the irreversible complications resulting from uncontrolled subdural hematoma. Yet the condition is often unrecognized. Of 98 cases studied by Ingraham and Matson,¹ only about one third were hospitalized with the correct primary diagnosis. The usual belief that this lesion seldom occurs, in addition to the lack of a characteristic clinical picture, is largely responsible. In this connection Ingraham and Matson point out that the frequency with which subdural hematoma is found is largely proportional to the intensity with which it is sought. In the presence of any indication of subdural hemorrhage, puncture of the subdural space, they recommend, should be performed to establish a definite diagnosis. This

implies, of necessity, that the lesion must be suspected and sought for, as there is no other indication for subdural puncture. In 98 cases of subdural hematoma in children, the most constant features were generalized symptoms such as irregular fluctuations of temperature, failure to gain in weight, vomiting and irritability. Signs referred to the central nervous system, including hyperactive reflexes, paralysis, convulsions and coma, were sometimes present. More specific signs of intracranial hypertension, such as progressive enlargement of the head, separation of the cranial sutures and abnormalities of the eyeground were significant indications for doing subdural puncture. However, the clinical picture was frequently misleading, being that of an infant appearing acutely or chronically ill, with an elevated or subnormal temperature and malnutrition. A history of trauma to the head should then be carefully investigated, as it was present in over half of the patients. The fact that only 11 had skull fracture indicates that mild trauma might well account for many cases of subdural hematoma in children. In all cases, definite diagnosis was possible by the results of subdural puncture, which, performed with aseptic care, is a simple and safe procedure.

EARLY RECORD OF VITAMIN C DEFICIENCY

Perhaps the earliest recorded example of vitamin C deficiency was that described in himself by Luigi Cornaro in 1558. According to Marcovitch,¹ Cornaro restricted his diet to bread, the yolk of egg and a little meat, together with 14 ounces of wine. During July and August of each year he suffered from anorexia, but as soon as new wine became available his symptoms improved. In the light of modern knowledge this may be interpreted as evidence of vitamin C deficiency, since it is now known that wine, never overplentifully supplied with this vitamin, contains none at all after it becomes a year old. During periods of vitamin C deficiency, Cornaro frequently ate only the yolk of an egg; since carbohydrates create a demand for vitamin C that is not made by proteins or fats, he thus showed himself to be a keen observer and an astute selector of suitable food.

EXPECTATION OF LIFE

The League of Nations Monthly Bulletin for December presents tabular data on the expectation of life at birth and at 1 year of age in over thirty countries. For all countries covered the expectation of life at birth and in the earlier years of life is greater than in previous periods; the improvement is less striking or absent in later stages of life. The United States ranks high in the list and is exceeded only slightly by the Netherlands, New Zealand, Australia and Sweden. Japan, Russia and India have the lowest expectation of life, according to the latest information available. In all countries females show a greater expectation of life than males.

4. Thill, C. J.; Stafford, W. T.; Spooner, M., and Meyer, O. O.: *Proc. Soc. Exper. Biol. & Med.* 54: 333 (Dec.) 1943.

1. Ingraham, F. D., and Matson, D. D.: *Subdural Hematoma in Infancy*, *J. Pediatr.* 24: 1 (Jan.) 1944.

1. Marcovitch, S.: *An Early Record of Vitamin C Deficiency*, *J. History Med.* 14: 395 (Oct.) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

COORDINATION OF PHYSICAL AND SURGICAL THERAPY IN ORTHOPEDIC AND AMPUTATION CASES

The War Department states in the Technical Bulletin of Medicine No. 10, dated February 14, that in order that the care of orthopedic and amputation cases may be of the highest order, treatment by responsible medical officers and physical therapists must be more closely coordinated. Such coordination can be effected by the attendance of physical therapists at ward rounds and at clinical orthopedic conferences at which the diagnosis, clinical history and proposed therapy in each case are discussed by the ward officers and section chiefs.

An active program of muscle development and rehabilitation during convalescence is essential. More careful attention during the early postoperative period should be given to special exercises of the muscles of the abdominal wall, extremities and back. By their use all patients requiring prolonged periods in bed, including those in casts, can prevent the development of muscle weakness and atrophy.

The importance of quadriceps muscle treatment is too frequently disregarded. This has been responsible for poor postoperative results, especially in cases of internal derangement of the knee joint. Preoperative instruction of the patient in regard to exercises to be carried out following surgery should be given. The prescribed exercises should be begun as early as forty-eight hours after surgical operation and should be graduated to include, successively, static contraction, straight leg raising, active motion and resistive exercises. Full weight bearing must not be permitted until the strength of the quadriceps is adequate. Grouping of patients with allied conditions will facilitate instruction and promote interest and a spirit of competition in the proper performance of the prescribed exercises.

Massage should be employed only in those cases in which it is definitely indicated and should never be carelessly or hurriedly administered. Such therapy is a valuable supplement to active exercises but not a substitute for them.

In the case of peripheral nerve injuries particular attention should be given to muscle testing and tests for sensory changes. The progress of these cases can be followed only when this information is well known to both the medical officer and the physical therapist.

In regard to the treatment of anterior poliomyelitis, the principles of support, splinting and therapeutic exercise have been presented in SGO, Circular Letter No. 175, dated Oct. 20, 1943, and published in THE JOURNAL, Nov. 27, 1943, page 841.

MILLION SOLDIERS MADE DENTALLY FIT BY ARMY DENTAL CORPS

Approximately 1,000,000 men have been rendered dentally fit by the Army Dental Corps for general military service since the start of the war, according to a recent release from the War Department. Accepted into the Army under lowered dental requirements, these men were treated by the Army Dental Corps to correct defects, cure dental diseases and provide dentures. Dental requirements were lowered in October 1942, since which time about one man in a thousand has failed to meet maximum dental requirements. Since Pearl Harbor, more than 1,075,000 new dentures have been furnished and Army personnel have had more than 31,142,000 teeth filled. More than 56,000 bridges, 220,000 denture repairs and 323,500 prophylactic

and pyorrhea treatments have been provided. During the latter months of 1943, 30 per cent more teeth were replaced by dentures and bridges than were extracted by the Dental Corps. It is estimated on the basis of past experience that there will be a minimum of 60 extractions for each hundred men inducted, and about 15 new dentures. The average man will require five or six fillings, in addition to various other dental services. About 3.5 per cent of newly inducted personnel wear one or more dentures.

SLEEPING BAG FOR EVACUATION OF WOUNDED

A new type of sleeping bag has been designed and developed by the Quartermaster Corps for evacuation of wounded under conditions of extreme cold, the War Department recently announced. The new sleeping bag will be used by Army Air Forces for air evacuation at high altitudes, and by Army Ground Forces in ambulances operating in arctic and subarctic areas. It consists of two mattresses held together by a 20 foot long slide fastener with ten separate sliders. The outside of the bag is of water repellent duck and the inside is of cotton balloon cloth. It weighs about 24 pounds, is quilted and is stuffed with feathers, and has six carrying loops. The bag may be opened out flat for cleaning and airing by bringing all ten sliders together on one side. When occupied and closed, use of any of the ten sliders permits easy access to any part of the wounded man without entirely exposing him. Another 32 inch fastener with three sliders permits opening the bag down the front, including an arrangement for a face opening. A face opening also may be made at one side for patients who must be transported lying on one side.

NEW FRONT LINE SURGICAL TRUCK

A new type of surgical operating truck, the idea of Major Gen. Norman T. Kirk, Surgeon General, U. S. Army, which enables several army surgical teams at the front lines to work at the same time with the result that from 80 to 100 men can be operated on during a full twenty-four hours, was announced by the War Department February 23. Numerous units have already been manufactured and sent overseas. The truck is six wheeled and has a 2½ ton capacity. The teams work in tents attached like two rooms to the rear of the truck. The tent rooms are double walled and lined in white duck to give light. Screened windows give added illumination. The inside of the truck is used for the storage of supplies, instrument cabinets and scrub sinks. In the old type surgical mobile unit, still in use where it meets the need satisfactorily, only one team can work at a time. Operations are performed in the truck. A tent attachable to it can be used only for receiving and delivering patients.

BANDAGING AND SPLINTING

The War Department has issued a field manual numbered FM 8-50 on bandaging and splinting. It offers a complete discussion of basic materials, the use of triangular and cravat bandages, roller bandages, dressings and splints, also instructions regarding the Balkan frame. The manual is planned primarily as a guide to medical officers and noncommissioned officers concerned with instructing medical department personnel. Copies may be obtained from the Government Printing Office.

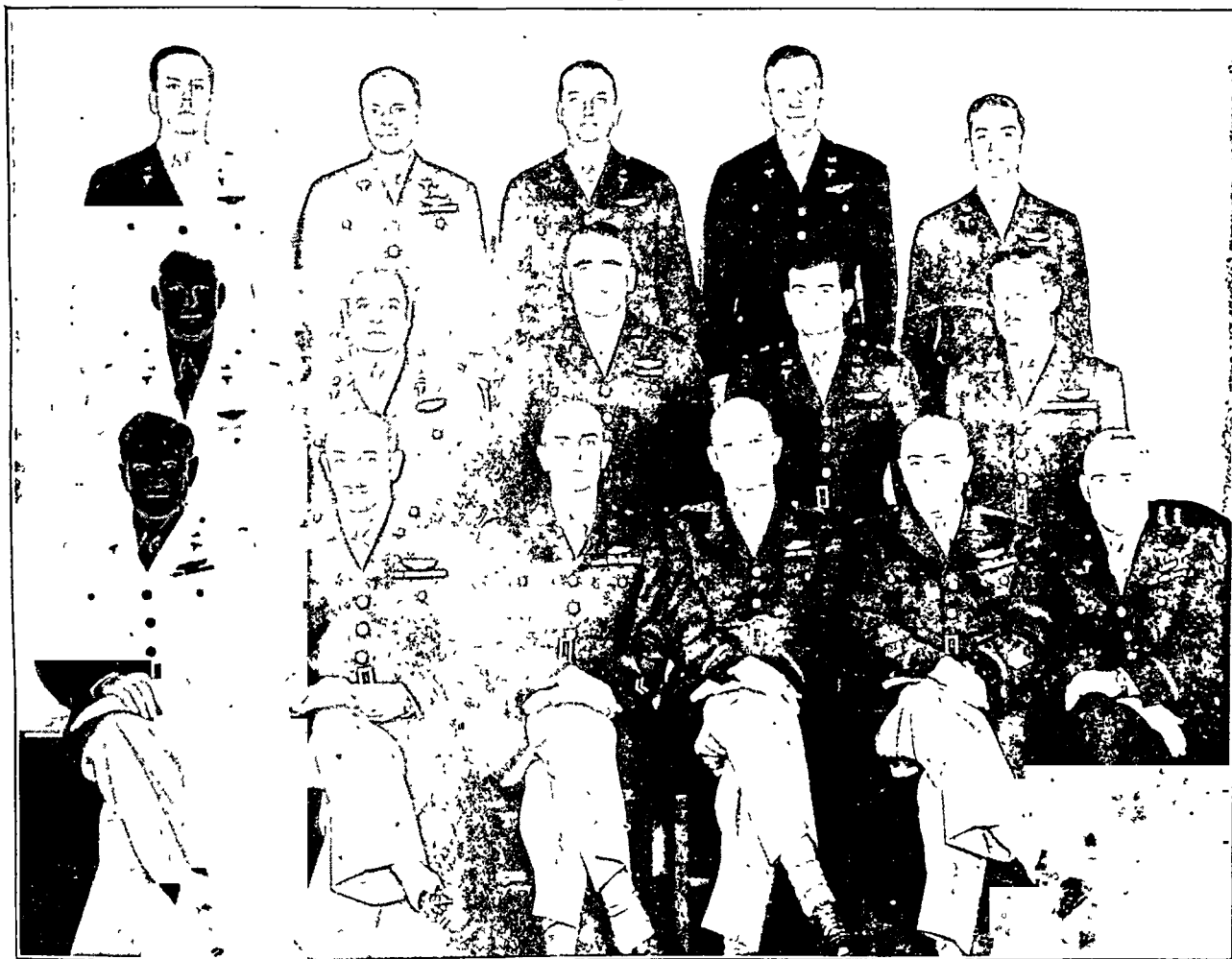
ARMY AIR FORCE SURGEONS

A meeting of surgeons from all U. S. Army Air Forces Commands and Air Forces within the continental limits of the United States was held from January 20 to 23 in the office of the Air Surgeon, Washington, D. C. In the accompanying illustration, reading from left to right, are shown the following officers:

Front row: Col. E. F. Harrison, surgeon, AAF Central Flying Training Command, Randolph Field, Texas; Brig. Gen. Eugen G. Reinartz, commandant, AAF School of Aviation Medicine, Randolph Field, Texas; Major Gen. D. N. W. Grant, the Air Surgeon; Brig. Gen. Charles R. Glenn, surgeon, AAF Training Command, Fort Worth, Texas; Col. Cadmus J. Baker, surgeon, First Air Force, Mitchel Field, N. Y.; Col. Fabian L. Pratt, surgeon, Fourth Air Force, San Francisco.

HONOR STUDENTS IN ARMY SPECIALIZED TRAINING PROGRAM AT WAYNE UNIVERSITY

Forty-five honor students in the Army Specialized Training Program, comprising the upper fifth of their class scholastically, received certificates of merit at a military review held recently at Wayne University. At the ceremony, Lieut. Col. Chester A. Marr, commanding officer of the Detroit technical training area, and Capt. Walter A. Cook, Capt. Keith Murdock and Lieut. Philip E. Goslee, all ASTP officers, represented the army. The university was represented by Dr. David D. Henry, executive vice president; Dr. William W. Whitehouse, dean of the College of Liberal Arts; Victor F. Spatheld, counselor in men's activities; Don Palmer, counselor of placement, and Howard Hess, assistant professor of electrical engineering.



Surgeons of Army Air Forces at meeting in Washington.

Second row: Col. Harold H. Twitchell, surgeon, Second Air Force, Colorado Springs, Colo.; Col. John M. Hargreaves, surgeon, Air Service Command, Patterson Field, Ohio; Col. Michael G. Healy, surgeon, AAF Western Flying Training Command, Santa Ana, Calif.; Col. Wilford F. Hall, surgeon, AAF Western Technical Training Command, Denver; Col. Paul C. Gilliland, Air Transport Command, Washington, D. C.

Third row: Col. Kenneth G. Gould, surgeon, Third Air Force, Tampa, Fla.; Col. Nuel Pazdral, surgeon, AAF Eastern Flying Training Command, Maxwell Field, Ala.; Col. Dan C. Ogle, surgeon, AAF Regional Station Hospital No. 1, Coral Gables, Fla.; Col. Ralph T. Stevenson, commandant, AAF School of Air Evacuation, Bowman Field, Ky.; Col. William H. Powell Jr., officer in charge, Professional Services, Headquarters AAF Training Command, Fort Worth, Texas.

CAPT. SHELDON C. SOMMERS AWARDED SILVER STAR

Capt. Sheldon C. Sommers, formerly of Indianapolis, has been awarded the Silver Star for heroism in action in Italy. The citation accompanying the award read "Under heavy enemy shell fire, Captain Sommers left his position of safety to care for several men who were wounded by an enemy burst. During this period Captain Sommers was under heavy artillery fire. After the wounded were treated and evacuated, he found that several unseasoned troops were becoming panic stricken. He calmed them and got them to return to their positions. Captain Sommers' action reflects great credit on the medical service." Dr. Sommers graduated from Harvard Medical School in 1941, interned at the University of Chicago Clinics and entered the service July 30, 1942.

CAPT. RICHARD F. KUHN AWARDED MEDAL OF DISTINCTION BY THE BEY OF TUNIS

Capt. Richard F. Kuhn, formerly of Detroit, has been awarded the Medal of Distinction by the Bey of Tunis in recognition of the medical aid he gave to Tunisian civilians while serving as a flight surgeon for the Red Devil Flying Fortress Squadron. Dr. Kuhn, now serving in Italy, was given the high award comparable to the U. S. Distinguished Service Medal by a French general, according to a letter received by Dr. Kuhn's parents. Dr. Kuhn graduated from Wayne University College of Medicine, Detroit, in 1938 and entered the service in June 1942.

MEDICAL REPLACEMENT TRAINING CENTER

Brig. Gen. Raymond W. Bliss, director of the operations division for the Surgeon General, addressed several hundred graduates of the School for Medical Officers at the Medical Replacement Training Center, Camp Barkeley, Texas. The ceremonies marked the completion of a six week indoctrination course for the officers and the first time that such a course was offered at a medical replacement training center, where all facilities for diversified training are offered. The course stressed physical conditioning and field work.

NEW RADIATION THERAPY SECTION AT ARMY MEDICAL CENTER

Ceremonies marking the opening of the new Radiation Therapy Section of the Army Medical Center were held March 10 in the Red Cross Building, Washington, D. C. The opening address was made by Major Gen. Shelly U. Marietta, and papers were presented on The Cancer Problem in the Army by Brig. Gen. Fred W. Rankin, The Treatment of Cancer in an

Army General Hospital by Lieut. Col. Rettig A. Griswold, The Development of Supervoltage Roentgen Rays by Major Milton Friedman, and The Postwar Cancer Problem by Dr. R. R. Spencer.

NEW OFFICERS OF THE AMERICAN MEDICAL SOCIETY ETO

At the annual meeting of the American Medical Society ETO, held at the headquarters, Eighth Air Force, the following officers were elected for the year 1944: Col. Herbert B. Wright, headquarters Eighth Air Force, president; Major Paul C. Morton, 49th Station Hospital, vice president; Lieut. Col. Theodore L. Badger, 5th General Hospital, secretary-treasurer; Lieut. Col. M. T. Kubin, 16th General Hospital, and Capt. Howard W. Rogers, 28th Division, executive committee.

CAPT. JOSEPH E. SCHENTHAL AWARDED LEGION OF MERIT

Capt. Joseph E. Schenthal, formerly of Baltimore, has been awarded the Legion of Merit by order of Lieut. Gen. George H. Brett, commander of the Caribbean defense area. The citation accompanying the award read "Captain Joseph E. Schenthal, Medical Corps, Army of the United States. For exceptionally meritorious conduct in the performance of outstanding service from Jan. 29, 1942 to March 9, 1943, as surgeon of a Coast Artillery regiment. From the beginning, Captain Schenthal displayed an extraordinary interest in his problems and particularly that of combating malaria. Largely due to his personal interest and efforts, high professional skill and devotion to duty, he was responsible to a marked degree for the sharp decrease in the malarial rate of his regiment." Dr. Schenthal graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1939 and entered the service June 1, 1941.

NAVY

NAVY DOCTORS FIND TONS OF MEDICAL SUPPLIES AT CAPE GLOUCESTER, NEW BRITAIN

Navy doctors attached to the Marine regiment that took the air fields from the Japanese at Cape Gloucester, New Britain, found tons of medical supplies, much of them in usable condition. Vitamin concentrates and drugs were destroyed, however, because of their unknown quality and strength. Prized finds were surgical and dental instruments, many of which had been plundered from army hospitals in the Philippines. Lieut. Joe P. Page, U.S.N.R., a dentist, exhibited a contra-angle handpiece for dental drills manufactured by S. S. White Dental Manufacturing Company. Neatly packed in a wooden box, stripped with metal, was a set of forceps and dental picks. Large boxes of gauze and cotton were salvaged by Marine quartermasters. Lieut. Comdr. Richard M. Forsythe, a former resident in surgery at Grasslands Hospital, Westchester County, N. Y., found a tracheotomy set for throat surgery and well packed anesthesia sets for parachute dropping. Some quinine of known quantity was salvaged. A German product similar to atabrine, a malaria preventive, is being tested for possible use there.

LIEUT. COMDR. TOM T. FLAHERTY RECEIVES SILVER STAR MEDAL

Lieut. Comdr. Tom T. Flaherty, formerly of Long Beach, Calif., has been awarded the Silver Star Medal. The citation accompanying the award is as follows: "For conspicuous gallantry and intrepidity in action while evacuating wounded aboard a Naval Transport Plane, attached to Marine Air Group Twenty-Five, operating in the Solomon Islands Area, Sept. 14-15, 1942. Flying in a cargo plane with emergency supplies to Henderson Field, Guadalcanal, to assist in evacuating wounded personnel, Lieutenant Commander Flaherty (then Lieutenant) courageously remained at his post despite continual

bombing and strafing of the field by enemy aircraft, supervising and aiding in the loading of the wounded who were under his care. His fearless and untiring devotion to duty was in keeping with the highest traditions of the United States Naval Service." Dr. Flaherty graduated from the University of Southern California School of Medicine, Los Angeles, in 1939 and entered the service in August of that year.

THE NEW BRONZE STAR MEDAL

The Secretary of the Navy recently authorized that the ribbon bar for the new Bronze Star Medal, established February 4 by the President of the United States for both the United States Army and the United States Navy, will be Old Glory Red with an eighth-inch stripe of Royal Blue in the center with white piping on each side of the blue and at the edges of the bar. The ribbon bar will be $1\frac{3}{8}$ inches wide and $\frac{1}{2}$ inch long. The purpose of the new medal, which takes precedence next after the Navy and Marine Corps Medal and next before the Air Medal, has been described by the President, which description follows in part:

"There is hereby established the Bronze Star Medal . . . for award to any person who, while serving in any capacity in or with the Army, Navy, Marine Corps or Coast Guard of the United States on or after Dec. 7, 1941, distinguishes or has distinguished himself by heroic or meritorious achievement or service, not involving participation in aerial flight, in connection with military or naval operations against an enemy of the United States."

NAVY PERSONAL

The Navy Department recently announced the promotion of Rear Admiral Ross T. McIntire, Surgeon General of the Navy, to the rank of Vice Admiral.

MISCELLANEOUS

PROCEDURES GIVEN FOR SELECTING
A. S. T. P. MEDICAL, DENTAL
AND VETERINARY
TRAINEES

As recently announced by the War Department, soldiers who remain in the Army Specialized Training Program after April 1 will be primarily those assigned to courses in medicine, dentistry, veterinary medicine and advanced engineering.

Procedures governing selection of medical, dental and veterinary trainees were announced on March 2. Meanwhile, procedures for the selection of trainees in engineering and foreign area and language to be retained now are under consideration. In addition, broad expansion of the Army Specialized Training Reserve Program is contemplated, with details to be announced publicly soon.

Enlisted men now assigned to the Army Specialized Training Program for instruction in medicine, dentistry and veterinary medicine will be continued in the program. Also Army Specialized Training Program soldiers currently enrolled in preprofessional courses will be continued in those studies and, on successful completion of that work, will be advanced to the medical or dental phase of the program.

Assignment to training in medicine and dentistry in the Army Specialized Training Program for the remainder of the year will be made from among enlisted men who prior to April 1 have been accepted for 1944 classes in contracting medical and dental schools.

Civilians now in medical or dental schools and those who have been accepted for a 1944 class in an accredited medical or dental school but who did not receive a call for induction prior to March 1 will not be assigned for Army Specialized Training Program training in medicine or dentistry.

Selection for preprofessional and subsequent professional training in medicine and dentistry will be restricted to soldiers who have completed their basic military training and have accomplished one of the following:

1. Passed an aptitude test for medical profession on successful completion of term 2 or term 3 in the Army Specialized Training Reserve Program.

2. Received a satisfactory score in the Army-Navy (A-12, V-12) College Qualifying Test (men in this group must have satisfactorily completed at least a year of premedical or pre-dental studies as civilians).

Priority will be given in the order as outlined. Any additional vacancies may be filled by soldiers selected on the basis of their proved abilities and academic background.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Woodrow Wilson General Hospital, Staunton, Va.: Psychosomatic Medicine, Dr. O. B. Darden, March 30.

At Camp Pickett, Virginia: Physical Therapy in War Wounded, Major Ben L. Boynton, March 29.

At Ashford General Hospital, White Sulphur Springs, W. Va.: Shock, Burns and Fluid Balance (lecture, surgical ward rounds and clinical demonstrations), Dr. Alfred Blalock, March 27.

At Fort Eustis, Virginia: Recent Advances in Cardiovascular Disease, Dr. William B. Porter, March 30.

At Newton D. Baker General Hospital, Martinsburg, W. Va.: Drug Allergies, Dr. Leslie N. Gay, March 27.

METHYL BROMIDE PLACED
UNDER ALLOCATION

The War Production Board recently announced that methyl bromide, commonly used as an insecticide, has been placed under allocation, effective March 1, by amending Miscellaneous Chemicals Order M-340 to include it. The maximum monthly small order exemption is fixed at 10 pounds. No other deliveries may be made without specific authorization.

PRISONER OF WAR MAIL

A directive has been issued that letters or postal cards addressed to American prisoners of war in German camps should be placed by the sender in an outer unsealed envelop, addressed simply "Postmaster—Prisoner of War Mail." The inner envelop or card should be addressed in accord with the directions previously given. The letter or card may then be dropped in a mail box without postage. When collected by a postman the outer envelop will be removed by the Post Office and the letter or card will be sent, without postmarking, to New York for censorship, or the letter or card may be given to a post office clerk, without the outer envelop, and the mail will be forwarded to New York.

The sole purpose of this procedure is to avoid placing postmarks that will be objectionable to German authorities—postmarks such as "V for Victory" and "Buy War Saving Stamps and Bonds." Air mail letters must not have stamps marked with slogans or patriotic ideas, nor must objectionable endorsements be placed on the wrappers or cartons of next of kin parcels. The War Shipping Administration has announced that the American Red Cross has purchased the S. S. *Spokane*, a freighter, to be used for carrying relief parcels to Americans who are in German prison camps.

VITAMIN A PLACED UNDER
ALLOCATION

The War Production Board recently announced that vitamin A, which is sometimes used in overcoming night blindness, was placed under allocation for the first time. The action was taken to insure equitable distribution of the vitamin in the face of mounting demand. This increase in demand will exceed the volume of new supplies and make it necessary to draw on reserve. It was stated that this move would have no great effect on the public in the near future. Vitamin A occurs naturally in fish liver oils. Four synthetic vitamins already are under allocation. These are vitamin C, vitamin B₁, vitamin B₂, and nicotinic acid. Cod liver oil and tuna liver oil are not affected by the new order, No. M-373. Vitamin A in standard dosage forms or in food and feed compounds is also exempted.

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, March 4, p. 655)

INDIANA

Ball Memorial Hospital, Muncie. Capacity, 229; admissions, 6,506. Nellie G. Brown, Superintendent (3 interns, resident—pathology, resident—mixed, May 1).

MASSACHUSETTS

Beth Israel Hospital, Boston. Capacity, 215; admissions, 6,314. Charles F. Wilinsky, M.D., Executive Director (intern—pathology).

NEW YORK

Norwegian Lutheran Deaconesses' Home and Hospital, Brooklyn. Capacity, 162; admissions, 4,106. Rev. C. O. Pedersen, Superintendent (4 interns, 3 residents—October 1).

PENNSYLVANIA

Fitzgerald Mercy Hospital, Darby. Capacity, 191; admissions, 5,387. C. T. McCarthy, M.D., Medical Director (interns—October 1). St. Christopher's Hospital for Children, Philadelphia. Capacity, 45; admissions, 1,906. Mabel Barr, administrator (3 residents—pediatrics). St. Margaret Memorial Hospital, Pittsburgh. Capacity, 129; admissions, 2,191. Adele M. Poll, R.N., Superintendent (2 interns—October 1).

WISCONSIN

Luther Hospital, Eau Claire. Capacity, 146; admissions, 4,577. N. F. Hanshus, Superintendent (interns—March, July, November, and February—July).

ORGANIZATION SECTION

COMMITTEE ON POSTWAR MEDICAL SERVICE

The Committee on Postwar Medical Service met in Washington, D. C., on March 4. There were present Dr. Irvin Abell, Dr. F. G. Blake, Commander Edward L. Bortz, Dr. William B. Breed, Surg. Gen. Warren F. Draper, Dr. Walter F. Donaldson, Capt. W. E. Eaton, Dr. Morris Fishbein, Dr. Evarts Graham, Dr. Alan Gregg, Dr. C. M. Griffith, Dr. E. E. Irons, Dr. Roger I. Lee, Lieut. Col. Harold Lueth, Dr. James M. Mason, Dr. Walter W. Palmer, Dr. J. E. Paullin, Dr. G. M. Piersol, Brig. Gen. Fred W. Rankin and Dr. H. H. Shoulders.

QUESTIONNAIRE ON POSTWAR NEEDS

After the minutes of the previous meeting were approved, the chairman requested Dr. Lueth to discuss the problems involved in sending out questionnaires to physicians in the armed services on the subject of their expected needs on return to civilian life. Dr. Lueth discussed the sample questionnaire and the methods to be followed in phrasing its questions and interpreting the answers. It was moved, seconded and passed that a revised questionnaire be sent out at the earliest possible time to physicians in military service. The purpose of such a form of inquiry is of course to define more clearly the types of needs and requests of men on return from military service. From many points of view letters would be preferable to the mere answers to specific questions, but statistical treatment of letters is obviously difficult.

The possibility was suggested that the records of the Procurement and Assignment Services could be of value in postwar education or relocation problems. The secretary was instructed to inquire from the Honorable Paul V. McNutt in regard to his matter.

INFORMATION BUREAU AT HEADQUARTERS

Dr. Lee reported that the Board of Trustees of the American Medical Association was in favor of the creation, at staff headquarters of the Association, of an information service bureau,

though not of the ordinary placement type but rather a clearance agency for information on positions, opportunities and requests for physicians' services. Further planning will be needed as to the way in which such a service is to be organized.

Dr. Palmer stated that the principal need in further training will be related to the creation of additional places for assistant residents and residents in hospitals, including hospitals not now having such posts. The following motion was passed: It is of importance to the general welfare that an increased number of assistant residencies and residencies in hospitals (including hospitals now possessing such posts) be created for the education, training and adjustment of young physicians returning from military service to civilian practice.

It was also voted that the committee authorizes the chairman to appoint a subcommittee whose service will be offered to the Board of Trustees as available at any hearings on bill S. 1509 dealing with educational opportunities.

NEW MEMBERS FOR COMMITTEE

In the light of these motions and in connection with the committee's program as a whole, it was voted to invite representation on the committee from the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association, the Federation of State Licensing Boards, the Procurement and Assignment Services and the Advisory Board for Medical Specialties.

MEDICAL SUPPLIES

It was voted that inquiry be made of the proper authorities as to the eventual status of medical supplies at present under the Office of Civilian Defense.

It was voted that the next meeting of the committee be held Saturday, April 29, in New York.

OFFICIAL NOTES

MORE ELECTRICAL TRANSCRIPTIONS FOR RADIO PROGRAMS

The Bureau of Health Education announces the completion and immediate availability of a third series of electrically transcribed radio broadcasting records for local use by medical societies or in projects approved by the local medical society. This series consists of twelve broadcasts on six records. It is entitled *Dodging Contagious Diseases*.

Requests for these new transcriptions may be sent at once to the Bureau of Health Education of the American Medical Association, 535 North Dearborn Street, Chicago. There is no charge for the use of this material except the nominal cost of returning the records in the shipping container which is provided.

The records play ten minutes each, allowing five minutes of the usual fifteen minute radio schedule to be used locally for music or announcements by the local society.

Dodging Contagious Diseases is the third series of electrical transcriptions available. The first series, *American Medicine Serves the World at War*, and its continuation under the title *Medicine Serves America*, consists of eight broadcasts, additions being made month by month. The second series, *Before the Doctor Comes*, consists of sixteen broadcasts. All these series are available usually on short notice. From time to time, how-

ever, waiting lists exist. It is best to make reservations in advance.

A fourth series of transcriptions designed especially for broadcasts to and use in elementary schools is being developed under the title *Health Heroes and Hoboes*. This series will not be ready until the autumn term of school in 1944.

DOCTORS AT WAR

Radio broadcasts of *Doctors at War* by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time.)

The titles and guest speakers for the next three programs are as follows:

March 18. "You Must Help Win This War."
Speaker, Harold A. Vonachen, M.D., Medical Director, Caterpillar Tractor Company, Peoria, Ill.

March 25. "Our Blood For Our Boys."
Speaker, G. Cauby Robinson, M.D., National Director, Blood Donor Service, American Red Cross, Washington, D. C.

April 1. "White Reaper."
Speaker to be announced.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Kentucky

Bill Introduced.—H. 362 proposes to enact an entirely new pharmacy practice act. Among other things this bill, as it was amended in the House March 6, proposes to prohibit the sale at retail of aminopyrine, barbituric acid, cinchophen, dinitrophenol, sulfanilamide, thyroid or their derivatives except on the written prescription of a licensed physician, dentist or veterinarian.

Mississippi

Bill Enacted.—S. 84, to amend the uniform narcotic drug act, was approved by the governor February 22. The new law so defines narcotic drug as to include isonipecaïne, which is defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified."

Bills Introduced.—S. 324 proposes (1) to change the name of the South Mississippi State Charity Hospital to Laurel Community Hospital, (2) to provide for the control and management of that hospital by a board of trustees and (3) to permit certain portions of the hospital to be available for pay patients. S. 332 and H. 691 propose to authorize the boards of supervisors of Tate, DeSoto and Marshall counties to establish and operate a joint hospital. H. 668 proposes to prohibit any place serving or preparing food for human consumption from employing any food handler therein who does not possess a certificate from an appropriate public health authority that he or she has been examined and found free from venereal disease. H. 701 proposes to authorize the board of supervisors of Madison County to expend not more than \$100 on each needy maternity case. H. 708 proposes to appropriate \$655,380 to defray the expenses of the state board of health for the period beginning July 1, 1944 and ending June 30, 1946. H. 710 proposes to appropriate \$150,000 to defray the expenses of the state board of health in conducting a program of eradication and control of venereal diseases for the period beginning July 1, 1944 and ending June 30, 1946. H. 763 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate from a licensed physician, based on physical and laboratory examination, that the party is free from venereal disease.

New York

Bills Introduced.—S. 1336 and A. 1678, to amend the laws relating to the practice of medicine, propose that the examination required for a license to practice medicine shall be dispensed with in the case of any applicant who has not previously taken and failed such examination, who meets all the requirements of law and who subsequent to Dec. 7, 1941 and for at least twelve consecutive months has served in and has been

honorably discharged from the medical corps of any branch of the armed forces. S. 657 and A. 1537 propose to make it a felony for a person to prescribe, supply or administer to a woman or advise or cause a woman to take any substance or to use or cause to be used any instrument or other means with intent to producing an abortion other than a therapeutic abortion. A therapeutic abortion is defined in the bill as "the artificial interruption of an intrauterine pregnancy before the period of viability (up to twenty-eight weeks of gestation) is reached, where the continuance of such pregnancy would jeopardize the life of the woman or so aggravate the physical or mental disease from which she suffers as seriously to impair her health or threaten her life. It may be performed only by a physician duly licensed in the state of New York and only in a hospital recognized by the department of social welfare of New York state or the department of health of New York state or approved by the American College of Surgeons and/or the American Medical Association, after written opinions as to its necessity have been obtained from two competent, qualified and recognized consultants in the respective specialties involved, which said written opinions shall be incorporated in the records of the hospital." A. 1594 proposes to prohibit the practice of x-ray diagnosis, x-ray therapy or radium therapy, except by licensed physicians, dentists or chiropodists. "X-ray diagnosis," according to the bill, "means that method of medical practice in which demonstration and examination of the normal and abnormal structures, parts or functions of the human body are made by use of x-rays, and any person who holds himself out to diagnose or able to make or makes any interpretation or explanation by word of mouth, writing or otherwise of the meaning of a fluoroscopic or registered shadow or shadows of any part of the human body made by the use of x-rays, and also the use of x-rays or radium for the treatment of any human ailment shall be deemed to be engaged in the practice of medicine within the meaning of this article." A. 1930, to amend the uniform narcotic drug act, proposes so to define narcotic drug as to include isonipecaïne, which is defined in the bill as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified." A. 1826, to amend the laws relating to the practice of medicine, propose to make it a cause for revocation of a license for the physician concerned to participate in the division, transference, assignment, rebating, splitting or refunding of his fee for medical care.

South Carolina

Bill Enacted.—H. 945, to amend the uniform narcotic drug act, was approved by the governor March 4. The new law so defines narcotic drug as to include isonipecaïne, which is defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified."

WOMAN'S AUXILIARY

Colorado

About 700 service men were entertained by the Denver County auxiliary recently at a buffet supper at the Service Men's Center.

The Pueblo County auxiliary and the Medical Auxiliary of Northeastern Colorado sewed for the Red Cross recently.

New Jersey

The year's project of Essex County is child welfare. The auxiliary gets in touch with nursing mothers who have an excess of milk, obtains this excess milk and sees that it reaches Coit Memorial Hospital, where it is processed and held in the milk bank until needed.

The Gloucester County auxiliary has made each member responsible for at least two *Hygia* subscriptions. Profits from subscriptions will be used to cover expenses of the reciprocity tea and for the annual donation to the Red Cross.

Hudson County auxiliary is making a collection of recipes to be published in a book and sold for the Benevolent Fund.

Mercer County auxiliary was hostess in January to the Woman's Auxiliary to the Medical Society of New Jersey.

West Virginia

At a recent meeting of the Woman's Auxiliary to the McDowell County Medical Society, Dr. C. W. Vick spoke on "History of Medicine in McDowell County." Books, magazines and games were sent to the Ashford General Hospital at White Sulphur Springs.

The Raleigh County auxiliary met in November. Mrs. Ross P. Daniel, president, discussed the Wagner-Murray-Dingell bill.

A luncheon meeting of the Woman's Auxiliary to the Kanawha Medical Society was held at the Charleston Woman's Club in November. Mrs. A. A. Shawkey reviewed "The Story of Doctor Wassell." The Christmas party was held at the home of Mrs. A. C. Wilson.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Personal.—In a resolution sent to Governor Sparks the Jefferson County Medical Society has recommended the appointment of Dr. James S. McLester, Birmingham, for a post on the medical advisory board of the University of Alabama Medical School to be established in Birmingham.

State Medical Meeting.—The Medical Association of the State of Alabama will conduct its annual session at the Whitley Hotel, Montgomery, April 18-20, under the presidency of Dr. Fred W. Wilkerson, Montgomery, and with the Montgomery County Medical Society acting as host. Out of state speakers on the program will include:

Lieut. Col. Walter O. Klingman, M. C., A. U. S., Psychiatric Problems in Flying Personnel.

Dr. John E. Walker, Columbus, Ga., The Significance of the Wide S Wave Pattern of the Electrocardiogram.

Dr. Paul W. Austin, West Point, Ga., The Value of the Preemployment Examination in an Industrial Health Program.

Dr. Arthur Neal Owens, New Orleans, Some Recent Trends in the Advancement of Plastic Surgery.

Dr. Francis E. Le Jeune, New Orleans, The Prognosis and Treatment of Cancer of the Larynx.

Dr. Randolph Lyons, New Orleans, The Schemm Treatment of Chronic Heart Failure with Edema: Report of Illustrative Case.

Dr. Morris Fishbein, Editor, THE JOURNAL, Planning for Postwar Medical Services.

Dr. Cobb Pilcher, Nashville, Tenn., The Treatment of Cranio cerebral Wounds.

The Jerome Cochran Lecture will be delivered by Dr. Tinsley R. Harrison, dean of the Southwestern Medical College of the Southwestern Medical Foundation, Dallas, Texas, on "The Value and Limitations of Laboratory Tests in the Practice of Medicine."

COLORADO

Dr. Lull Resigns from State Board.—Dr. Lynn J. Lull, Denver, has resigned as director of the venereal disease control division of the Colorado State Division of Public Health. Newspapers report that he will take over a similar position in the Idaho State Board of Health at Boise.

CONNECTICUT

Psittacosis.—The Hooper Foundation for Medical Research of the University of California, San Francisco, recently confirmed the diagnosis of psittacosis in 2 parakeets that had been shipped illegally into Connecticut from Texas by railway express. One of the birds died soon after arrival. The parakeets had been intercepted in Connecticut before they had been delivered to the mother of a soldier stationed in Texas. It is reported that during 1943, preceding the arrival of these infected birds, four other illegal shipments of birds had been reported. Three had been made from Texas and the other from the District of Columbia. In an effort to preclude further illegal shipments of parakeets by its facility, the railway express agency has recently issued a traffic department circular giving detailed information to their agents with regard to the legal requirements for the acceptance of birds of the psittacosis family for shipment from one state to another.

DISTRICT OF COLUMBIA

Board of Visitors.—The District commissioners have appointed a board of visitors for the municipal hospitals, Washington. According to *Medical Annals of the District of Columbia* a lay board of visitors can be of great value to an administrator by bringing the layman's point of view and acting as friendly advisers. *Medical Annals* further states that this is a step that should redound to the benefit of the public hospitals of the District.

GEORGIA

Convicts to Serve in Malaria Tests.—More than 200 inmates of the federal penitentiary in Atlanta have volunteered to serve as human "guinea pigs" for experiments seeking a malaria remedy more potent than quinine or atabrine. Newspapers announced that experiments would be conducted in cooperation with the National Research Council acting for the Office of Scientific Research and Development and its committee on medical research. The study will be under the supervision of the U. S. Public Health Service and will be integrated with similar undertakings at a number of civilian

institutions. At the Federal Reformatory, El Reno, Okla., 300 inmates are at present voluntarily taking gas gangrene toxoid inoculations. John T. Wright, A. Surg., U. S. Public Health Service, is in charge, the results of which have not yet been announced. In a newspaper report concerning the project at New Jersey State Prison last May, when 317 inmates volunteered in a test of a vaccine to be used against epidemic encephalitis, it was stated that there was a mild reaction in about 3 per cent of the cases. Only one volunteer was seriously affected; he almost died but recovered. The New Jersey study was under the supervision of Dr. Robert Ward, New Haven, Conn., for the U. S. Army.

IOWA

Personal.—Dr. Frank O. Kershner, Clinton, has retired from active practice on account of ill health.—Dr. Willis E. Brown, assistant professor of obstetrics and gynecology, University of Nebraska College of Medicine, Omaha, has been appointed to a similar position at the State University of Iowa College of Medicine, Iowa City.

State Medical Meeting.—The ninety-third annual session of the Iowa State Medical Society will be held at the Hotel Fort Des Moines, April 20-21, under the presidency of Dr. Lee R. Woodward, Mason City. The guest speakers will include:

Dr. Anton J. Carlson, Chicago, Physiologic Aspects of Cardiac Disease.

Dr. William N. Hahn, Omaha, Procedures Following Some of the More Frequent Eye Injuries.

Dr. Clarence D. Selby, Detroit, A Postwar Industrial Medical Program.

Lieut. Col. Malcolm J. Ferrell, M. R. C., Developments in Military Neuropsychiatry.

Dr. Walter H. Judd, Washington, D. C., Postwar Planning.

Dr. Norman F. Miller, Ann Arbor, Mich., Toxemias of Late Pregnancy.

Dr. Alfred W. Adson, Rochester, Minn., The Activities of the Council on Medical Service and Public Relations and the Responsibilities of Individual Physicians.

The State Society of Iowa Medical Women and the American Medical Women's Association, Branch 19, will meet April 20. The Woman's Auxiliary to the state medical society will hold its fifteenth annual session at the Hotel Kirkwood, Des Moines, April 20-21.

KANSAS

Executive Secretary Resigns.—Mr. Robert Brooks, Topeka, has resigned as executive secretary of the Kansas Medical Society, effective February 1. He had held the position since October 1942 after Mr. Clarence Munns was granted leave of absence to enter military service. Mrs. Margaret Foster, secretary in the executive office of the state society, has been named acting executive secretary.

KENTUCKY

Changes in Health Officers.—Dr. James A. Campbell, health director of Scott County, has been transferred to a similar position in Mason County. Dr. George M. Jewell, Paris, health director of Bourbon County, has been assigned to Scott County for two days each week.

MASSACHUSETTS

Health Department Opens Veterans' Clinic.—The state department of mental health has opened an outpatient clinic for veterans of World War II from Essex County. The clinic is in charge of Dr. Clarence A. Bonner, medical superintendent of the Danvers State Hospital, Hathorne, and is interested in men and women who have been discharged from the armed forces or rejected from their draft boards because of such symptoms as nervous heart or nervous stomach, dizziness, headaches, fainting spells, fits and seizures, irritability, outbursts of temper, easy fatigability and poor memory. Rehabilitation efforts will be instituted to help these persons become readjusted in the community and in industry.

MICHIGAN

Society News.—The Wayne County Medical Society and the Michigan Society of Obstetricians and Gynecologists were addressed in joint session March 6 by Dr. M. Edward Davis, Chicago, on "Modern Management of the Third Stage and Its Complications."—On January 12 Dr. Roy D. McClure and the surgical staff of the Henry Ford Hospital, Detroit, entertained the members of the Flint Academy of Surgery at a scientific meeting, luncheon and surgical clinic.

Dr. De Kleine Named State Health Commissioner.—Dr. William De Kleine, for many years director of medical and health service of the American Red Cross, on February 18 has been named state health commissioner for Michigan. The appointment would be for the remaining three year term of the late Dr. Henry Allen Moyer, if confirmed by the senate, newspapers report. Dr. De Kleine graduated at Northwestern

University Medical School, Chicago, in 1906 and received his master of science degree at the University of Michigan School of Public Health, Ann Arbor, in 1915. For a number of years he practiced medicine in Grand Haven, subsequently throughout his career maintaining his residence there. He served in various capacities on the state board of health. In 1927 he became associated with the American Red Cross during the Mississippi Valley flood and the following year was named director of medical and health service. He resigned in 1941. He once served as president of the Michigan Tuberculosis Association and of the Michigan Public Health Association.

MINNESOTA

Dr. Hansen Named Director of Ophthalmology Division.—Dr. Erling W. Hansen, clinical assistant professor of ophthalmology at the University of Minnesota Medical School, Minneapolis, has been appointed clinical professor and director of the division of ophthalmology at the university.

NEW JERSEY

The Harrison Martland Lecture.—The ninth annual Harrison S. Martland Lecture will be given by Dr. Otto Loewi, research professor of pharmacology, New York University College of Medicine, March 22, at the Academy of Medicine of Northern New Jersey, Newark. This annual lecture is given in honor of Dr. Martland by the Essex County Anatomical and Pathological Society.

New Health Exhibits.—Seven new cases of material which continues the story of the Human Body, How It Works, were placed on exhibition in the Newark Museum in the science department, March 7. The addition to the museum's display was made possible by a gift of the late Louis Bamberger, honorary president of the museum. In the planning of the exhibits a special committee was appointed by the Academy of Medicine of Northern New Jersey, of which Dr. Royal A. Schaff, Newark, is chairman. The group includes displays on How We Hear, How We Breathe, Of These We Are Made, Life Continues, a case on posture and one with questions and answers relating to the skin. Two cases related to the ear show the manner in which sound travels from the outer ear to the auditory nerve, with a set of chimes indicating what happens when the nerve impulses reach the brain.

NEW YORK

Veterans' Loan Fund.—The Westchester Medical Veterans' Loan Fund has been set up by members of the Medical Society of the County of Westchester. The fund will be available for returning members of the service to aid in reestablishing their private practice or serve other needs which may be required.

Graduate Lecture.—On April 19 Dr. Harvey B. Matthews, clinical professor of obstetrics and gynecology, Long Island College of Medicine, Brooklyn, will address the Saranac Lake Medical Society on "Forceps Delivery: Indications, Dangers and Accomplishment." The lecture is sponsored cooperatively by the state medical society and the state department of health.

Health Department Divisions Moved.—The offices of several units of the state department of health in Albany were moved recently. The office of medical administration, the division of maternity, infancy and child hygiene and the division of orthopedics are now located on the eighth floor of the Bond Building, 74-76 State Street. The division of cancer control and the division of public health education have quarters in the New York State Teachers Association Building, 152 Washington Avenue. The bureau of narcotic control has been moved to the fifteenth floor of the State Office Building. The work of the bureau of pneumonia control, formerly under the direction of the assistant commissioner for medical administration, has been reintegrated with that of the division of communicable diseases and space allotted to its staff on the fifteenth floor of the State Office Building.

New York City

Health Topics at Safety Meeting.—At the fifteenth annual safety convention and exposition of the Greater New York Safety Council, in the Hotel Pennsylvania, March 28-30, sessions will be devoted to occupational diseases and industrial nursing, women workers and eye protection.

Physiologist Dies.—Helen Copeland Coombs, Ph.D., instructor in physiology at Brooklyn College, Brooklyn, died March 4, aged 52. Dr. Coombs had done special research on the nervous mechanism of respiration, cerebral anemia, cardiovascular nervous mechanism, neurophysiology and pharmacology and relation of calcium and phosphorus metabolism to the nervous system.

Physician Sentenced for Abortion.—Dr. Alice M. N. Chairman was sentenced to a year in the penitentiary on February 23 by Judge Jacob Gould Schurman Jr. in general sessions for performing an abortion on an 18 year old woman, according to the New York Times. The Times also stated that Dr. Chairman was practicing medicine without a license, hers having been revoked in 1940.

First Lisa Award.—The Society of the Alumni of City (Charity) Hospital announces the presentation of the first James R. Lisa Award to Lieut. Chauncey L. Royster, M. C., A. U. S. Lieutenant Royster received the award for his work on "The Cardiac Findings in Syphilis Combined with Hypertension, in the Absence of Aortic Regurgitation." The Lisa Award was established by the Alumni Society of the City Hospital to recognize work in research medicine done in the laboratories of the hospital under Dr. Lisa's direction, the award to be made by Dr. Lisa at appropriate times to the worker deemed by him to be worthy of it. The award consists of a medallion and an honorarium of several hundred dollars (THE JOURNAL, Jan. 23, 1943, page 271). Lieut. Royster graduated at Cornell University Medical College in 1935 and served his internship and residency at the city hospital.

Center in Tropical Medicine to Be Developed at Columbia.—Plans to establish a world training center in tropical medicine at the Columbia University College of Physicians and Surgeons were announced to the press February 26 by Dr. Harry S. Mustard, professor of public health practice and director of the DeLamar Institute of Public Health at Columbia. The plans call for new building facilities, a greatly expanded personnel and additional laboratories and equipment. Recently the university established a department of tropical medicine in charge of Dr. Harold W. Brown as professor of parasitology (THE JOURNAL, Nov. 6, 1943, p. 647). The entire program of tropical medicine at Columbia will be under the direction of the DeLamar Institute of Public Health and has been made possible by a grant of \$150,000 from the Josiah Macy Jr. Foundation (THE JOURNAL, Jan. 23, 1943, p. 271). In addition the John and Mary R. Markle Foundation has given a sum for research in filariasis.

Welfare Council to Be Reorganized.—The Welfare Council of New York City, a federation of 700 local health and welfare agencies, will be reorganized to carry out more effectively its purpose of "contributing to the strategic employment of all resources existing or projected to meet present and foreseeable welfare and health needs of the City of New York." The action stemmed from the approval of a report on a recently completed eighteen months survey. Principal changes in the new plan affect representation in the directing bodies of the Welfare Council, and the plan calls for the appointment of a long range planning committee whose composition will insure "broad consideration of problems that cross the lines arbitrarily separating the fields of the other standing committees." The Welfare Council of New York City was founded in 1925. Its present administrative structure consists of a board of directors of 87 persons, both lay and professional, and an executive committee of 39. Both figures include certain ex officio members. The new plan calls for the reduction of these numbers by more than half.

Experimental Program on Industrial Health Education.—At a dinner on February 28 in the Hotel St. George, Brooklyn, the Fort Greene industrial health committee launched a demonstration program on health education for industrial workers in the Fort Greene District of Brooklyn. The project will be run for one year as a cooperative undertaking of management, employee groups, the New York City Health Department, the medical profession and a number of voluntary health agencies. It is anticipated that about 150,000 persons employed in the area will be reached by the drive to reduce preventable accidents, illness and resultant absenteeism. Headquarters for the project are in the Fort Greene Health Center of the New York City Health Department, 295 Flatbush Avenue Extension, Brooklyn. A panel discussion featured the dinner meeting on "Here's to Your Health" and was participated in by Reginald E. Gillmor, president of the Sperry Gyroscope Company; Erval R. Coffey, assistant surgeon general, U. S. Public Health Service; Dr. Victor G. Heiser, consultant on industrial health, National Association of Manufacturers; Dr. Leo S. Schwartz, Brooklyn, president, Medical Society of the County of Kings, and Dr. Jacob H. Landes, Brooklyn, health officer of the Fort Greene District. Mr. Gillmor and Louis Hollander, manager of the other New York Joint Board, Amalgamated Clothing Workers of America, are co-chairmen in the program. "Here's to Your Health" is also the title of an educational bulletin, the first issue of which appeared March 1.

OHIO

The Hanna Lecture.—Francis J. W. Roughton, Ph.D., lecturer in physiology, Cambridge University, England, will deliver the forty-ninth Hanna Lecture before the Academy of Medicine of Cleveland, April 12, at the Institute of Pathology, 2085 Adelbert Road. His subject will be "Some Recent Work on the Respiratory Chemistry of the Blood."

Diabetes in Children.—The Council on Diabetes of the Public Health Federation, Cincinnati, in cooperation with various health departments, is asking that physicians report to the secretary of the council the names and addresses of diabetic patients who are 18 years of age or younger. The council proposes to assist school nurses in their effort to have pertinent information with reference to these children on pupils' health cards. Names and addresses should be sent to Mrs. Joseph N. Gantz, secretary, Council on Diabetes, 312 West Ninth Street, Cincinnati 2.

Postgraduate Assembly.—The Mahoning County Medical Society will hold its sixteenth annual postgraduate assembly at the Pick-Ohio Hotel, Youngstown, April 19. At the afternoon session speakers will be Drs. William D. Collier, Youngstown, on "Clinical Problems Concerned with Blood Incompatibilities"; James Ross Veal, Washington, D. C., "Surgery of Thrombosis of the Peripheral Veins," and Edgar C. Baker, Youngstown, "Venography of the Lower Extremity." A dinner session will be addressed by Dr. Veal on "Acute Obstruction of the Small Intestines" and Dr. Eugene R. Whitmore, Washington, "Postwar Problems of Tropical Diseases in Civilian Practice."

New Appointments Under Research Expansion Program.—Fred W. Oberst, Ph.D., Lexington, Ky., has been placed in charge in the newly organized biochemistry department at the William S. Merrell Company, Cincinnati, and Harold W. Werner, Ph.D., has been named head of the department of pharmacology. The new department of biochemistry is located in the Cincinnati office of the Merrell Company and is one of the various units that comprise the research laboratories. Dr. Oberst has been engaged in biologic research on narcotics and drug addiction at the U. S. Public Health Service Hospital, Lexington, and Dr. Werner has been assistant professor of physiology and pharmacology at the University of North Dakota School of Medicine, Grand Forks, and pharmacologist at the National Institute of Health, Bethesda, Md.

PENNSYLVANIA

Society News.—Dr. George P. Guilbor and Mr. Austin B. Belgard, Chicago, and Dr. Chevalier L. Jackson, Philadelphia, will be the guest speakers at a meeting of the Reading Eye, Ear, Nose and Throat Society in Reading, April 19. The program will include clinics, conferences on the conservation of hearing and optical centers and four papers on motor disturbances (diagnosis, use of prisms, use of atropine, surgery). A lecture on "The Bronchial Tree" will also be given.

Philadelphia

Annual Health Institute.—The Woman's Auxiliary of the Philadelphia County Medical Society will sponsor its fourteenth annual health institute, April 11, at the Philadelphia County Medical Society. "Health Trends" will be the theme of the program, which will be presented by:

Dr. David A. Cooper, Mass X-Ray in Tuberculosis Case Findings.
Dr. Hubley R. Owen, Plans for the Medical Division of the Board of Education.
Dr. George Morris Piersol, Plans for New Developments in Physical Therapy.
Miss Theresa I. Lynch, Trends in Hospital Nursing.
Miss Mary L. Poole, The Functions of a Social Service Department in the Hospital.
Dr. Franklin D. Murphy, Dramatic Results from Modern Chemotherapy.
Capt. Jesse W. Allen (MC), U. S. Navy, Movies: Latest Authentic Eastern War Pictures.

Copyright of Pharmaceutical Textbook Transferred to College of Pharmacy.—A copyright of the textbook "Remington's Practice of Pharmacy" was recently transferred to the corporate body of the Philadelphia College of Pharmacy and Science as a memorial to the late Joseph P. Remington, dean of the college. The ownership of the copyright has been vested in the heirs of the Remington estate for decades. The gift was presented officially by Rev. William P. Remington, bishop of Oregon, acting in behalf of the living legatees. In accepting the gift the board of trustees of the college at once formulated plans whereby its revision would be undertaken so as to continue it as a widely accepted pharmaceutical reference authority and textbook. Ernest Fullerton Cook, Pharm.D., for many years assistant to Dean Remington, has been appointed editor for the current revision.

RHODE ISLAND

Personal.—Dr. Reuben C. Bates, Providence, has been elected a member of the governing council of the American Association of Medical Milk Commissions. Dr. Bates has served for many years as secretary of the Medical Milk Commission of the Providence Medical Association. —Comdr. William A. Stoops (MC), U. S. Naval Reserve, has been appointed president of the Newport Board of Health, and Dr. James C. Callahan was appointed secretary and a member of the board for a five year term. Dr. Callahan succeeds Dr. Samuel Adelson.

TEXAS

Graduate Assembly of Negro Physicians.—The eighth annual postgraduate assembly of Negro physicians in Texas was held at Prairie View State Normal and Industrial College, Prairie View, March 6-8. The assembly was sponsored by the State Medical Association of Texas, Lone Star State Medical, Dental and Pharmaceutical Association, National Tuberculosis Association, Texas Tuberculosis Association, Texas State Board of Health and the Prairie View State Normal and Industrial College. Dr. Arild E. Hansen, Galveston, addressed a public health meeting Tuesday evening on "The Practicing Physician's Responsibilities in the Problem of Child Health." Other speakers on the program included:

Dr. Edward L. Turner, Nashville, Tenn., Tropical Diseases as They May Affect Medical Practice in the United States.
Dr. Clarence Leon Wilson, Chicago, Some Misfortunes in Anesthesia in Labor.
Dr. William Roderick Brown Jr., Pittsburgh, Correlation of Criteria for Early Diagnosis in Pulmonary Tuberculosis.
Dr. Shirley S. Bowen, Houston, Therapeutic Principles in the Treatment of Syphilis.
Dr. Frank H. Lancaster, Houston, The Use of Sulfa Drugs in Children.
Dr. Ludwik Anigstein, Galveston, The Dysenteries.
Dr. John Potts, Fort Worth, Chest Pains as Diagnostic Leads and Diagnostic Factors.
Dr. Theodore K. Lawless, Chicago, The Clinical Manifestations of Syphilis.
James L. Tenney, Austin, administrative assistant, maternal and child health bureau, Texas State Board of Health, The Program of the U. S. Children's Bureau for Emergency Care of Wives and Infants of Servicemen.

WEST VIRGINIA

License Restored.—The license of Dr. Elmer G. Kesler, Williamsburg, was probationally restored recently with the provision that he would not apply for a narcotic permit or use narcotics or alcohol in any form. He was also directed to report to the public health council at quarterly intervals.

GENERAL

Dietetic Association Changes Date of Meeting.—The annual meeting of the American Dietetic Association will be held at the Palmer House, Chicago, October 25-27, instead of at the Stevens Hotel, October 17-19 as was previously announced (THE JOURNAL, February 26, p. 587).

Examinations in Ophthalmology.—The American Board of Ophthalmology announces that future examinations will be held in New York June 2, 3 and 5 and in Chicago October 5-7. The address of the board has been changed from P. O. Box 1940, Portland, Maine, to 704 Congress Street, Portland.

Society News.—The American Association for the Surgery of Trauma will hold its annual meeting at the Edgewater Beach Hotel, Chicago, June 9-10. Dr. Gordon M. Morrison, 520 Commonwealth Avenue, Boston, is the secretary. —The Catholic Hospital Association of the United States and Canada will conduct its twenty-ninth annual convention and second wartime conference at the Kiel Municipal Auditorium, St. Louis, May 21-26.

Dr. Winslow Named Editor of Public Health Journal.—Charles-Edward A. Winslow, Dr.P.H., Anna M. R. Lauder professor of public health, Yale University School of Medicine, New Haven, has been appointed editor of the *American Journal of Public Health*, succeeding Dr. Harry S. Mustard, New York. Dr. Winslow will assume his new position with the April issue. Dr. Winslow was president of the American Public Health Association in 1926 and in 1942 received a certificate for forty years of continuous membership and the Sedgwick Memorial Medal for distinguished service to public health.

Postgraduate Courses of College of Physicians.—The American College of Physicians has arranged a group of postgraduate courses. The first will be conducted April 10-15 at the University of Michigan Medical School and University Hospital, Ann Arbor, and will be devoted to general medicine. Members of the faculty at the medical school will cooperate in the instruction. "Clinical Medicine with Special Emphasis

upon the Hematologic Viewpoint" will be the theme of the second course, April 17-22, at the Ohio State University College of Medicine, Columbus, with members of the school faculty cooperating. The third course will be devoted to selected phases of internal medicine and will be conducted at the medical clinic at the Massachusetts General Hospital, Boston. Members of the faculty of Harvard Medical School will direct the instruction.

Conference of State and Provincial Health Authorities.—The fifty-ninth annual Conference of State and Provincial Health Authorities of North America will be held in Washington, D. C., March 22, in the District Medical Society Building, under the presidency of Dr. J. Lynn Mahaffey, Trenton, N. J. Among the speakers will be:

Dr. Stanley H. Osborn, Hartford, Conn., Dr. John T. Phair, Toronto, and James G. Townsend, medical director, U. S. Public Health Service, Industrial Health.

Dr. Kendall Emerson, New York, Postwar Problems of Tuberculosis.

Dr. Haven Emerson, New York, Local Health Units.

Dr. Wilton L. Halverson, Los Angeles, Training of Duration Public Health Personnel.

A round table discussion will be held on public health nutrition problems with Dr. Walter E. Wilkins, Raleigh, N. C., of the War Food Administration, as chairman.

Prizes for Research in Allergy.—Two annual awards have been established under the sponsorship of the American Academy of Allergy, effective January 1. One is the Abbott Award, which will consist of an annual prize of \$200 established by the Abbott Laboratories of Chicago, to be granted annually for the most important advancement in the field of allergy or for the development of a research problem on any phase of the subject. This prize will be considered for both members and nonmembers of the academy. The second award, to be known as the Secretary's Prize, is a medal to be given annually to a member of the academy for "the most outstanding achievement of the year in the general field of allergy." The American Academy of Allergy was formed recently when the Society for the Study of Asthma and Allied Conditions and the American Association for the Study of Allergy merged (THE JOURNAL, Dec. 25, 1943, p. 1129).

State and Territorial Health Officers.—The forty-second annual conference of the Association of State and Territorial Health Officers with the U. S. Public Health Service and the U. S. Department of Labor Children's Bureau will be held at the auditorium of the Medical Society of the District of Columbia, Washington, March 20-23, under the presidency of Dr. Irl C. Riggan, Richmond, Va. Among the speakers on the program will be:

Dr. G. Foard McGinnes, Washington, D. C., Utilization of Blood By-Products.

Thomas Parran, Surgeon General, U. S. Public Health Service, The State of the Nation's Health.

Hon. Paul V. McNutt, administrator, Federal Security Agency, Special Health Problems Affecting Manpower.

Joseph W. Mountin, medical director, U. S. Public Health Service, chief, states relations division, Present Status of Federal Legislation and Appropriations.

Stanley B. Freeborn, senior sanitarian, U. S. Public Health Service, The Eradication of Endemic Malaria.

Clifford R. Eskey, medical director in charge, typhus fever control section, The Increasing Importance of Endemic Typhus Fever.

Rolla E. Dyer, assistant surgeon general, U. S. Public Health Service, Exotic Diseases with Which Health Officers May be Concerned.

Features of the program will be a conference with the Children's Bureau with Miss Katharine F. Lenroot, chief of the bureau, presiding as chairman. The theme will be "Aspects of the Maternal and Child Health Program" with Drs. Edwin F. Daily and Sarah S. Deitrick, Washington, D. C., as the speakers. Another conference with the bureau will be presided over by Dr. Martha M. Eliot, associate chief of the bureau, presiding, to discuss the "Crippled Children Program Report." Dr. Abram L. Van Horn, Washington, D. C., will present a report on the "Rheumatic Fever Program."

LATIN AMERICA

Health Activities in Latin America.—The Hospital Insurance Association of Puerto Rico, San Juan, has signed contracts with fifteen hospitals and clinics throughout the island to offer medical services and hospitalization to members of the Blue Cross plan recently established here. The subscriber will pay 75 cents a month per person and \$1.50 a family per month as the quota established by the association.

Health Improvements in Puerto Rico.—A program of public health improvements submitted by Dr. Antonio Fernos-Isern, San Juan, commissioner of health, to reduce mortality rates in Puerto Rico includes extension and improvement of sewerage systems for the towns of Arecibo, Adjuntas, Aibonito,

Coamo, Guaynabo, Isabela, Moca, Patillas, Quebradillas, Guanica, Jayuya, Naranjito, Villalba and Aguas Buenas, also improvements to sewerage systems in twenty-four more municipalities; extension and improvements of water supply systems in urban and rural areas, with an appropriation of \$320,000; construction of 10,000 latrines at a cost of \$1,200,000; construction of antituberculosis sanatoriums in Arecibo, Aguadilla, Humacao and Cayey; extension to the Antituberculosis Sanatorium in Aibonito, Rio Piedras, Ponce, Mayaguez; extension of the malaria control program with an appropriation of \$62,450, and extension of the second unit health systems in the rural areas of Puerto Rico.

FOREIGN

Free Health Service in Great Britain.—A White Paper was presented to Parliament February 17 proposing a comprehensive medical service for all persons, newspapers reported. The proposal seeks to make available for every one advice, treatment and care with the best available facilities regardless of the patient's ability to pay. According to the *New York Times*, this is the first postwar social program outlined by Sir William Beveridge to be developed and it is the first one to attain this stage under the guidance of Lord Woolton, minister of reconstruction. The annual cost to the nation is estimated to be 146 million pounds. The *New York Times* further states that there will be no debate on the scheme until midsummer at the earliest, since the government is eager to gain full reports from the medical profession, local authorities and others affected before drawing up a bill embracing the major proposals. It was stated that the object of the policy set forth in the White Paper is "to bring the country's full resources to bear on reducing ill health and promoting good health in all its citizens. The objectives are:

To insure that every one in the country, irrespective of means, age, sex or occupation, has an equal opportunity to benefit from the best and most up to date medical and allied services available.

To provide, therefore, for all who want it a comprehensive service covering every branch of medical and allied activity from the care of minor ailments to major medicine and surgery; to include the care of mental as well as physical health and all specialist services, for example tuberculosis, cancer, infectious diseases, maternity, fracture and orthopedic treatment.

To divorce care of health from questions of personal means or other factors irrelevant to it; to provide service free of charge and encourage a new attitude toward health—easier obtaining of advice and early promotion of good health rather than only the treatment of bad.

In a statement to the press, Lord Dawson, president of the British Medical Association, said the project was a genuine statesmanlike endeavor to meet an extremely difficult position. The statement continued:

Within its framework of objects and principles much remains to be worked out. There are many points to be clarified as, for example, the experimental character of the health centers, the relationship of the individual family doctor to the hospitals, the mode of appointment and distribution of consultants, the compensation for the loss of capital value in general practices, the machinery by which the public will intimate its desire to avail itself of the service in whole or in part, the future of voluntary hospitals and contributory schemes and, not the least important, the functions of the proposed central medical board.

The *Times* stated that the status of the individual doctor is inviting the widest comment. The *Times* quotes the *Manchester Guardian*: "Not only is the doctor free to take part in the scheme or not—free, if he does take part to practice alone or as a group member—free even to buy and sell public practice, he will also be free to treat for a fee as a private practitioner patients who could claim the same treatment from him without charge." It was stated that the White Paper recognized the necessity of protecting the patients but does not explain how this can be done without insisting that every doctor must choose between public and private practice. In commenting on the reaction of the British Medical Association, it was stated that the association has a real fear of a general clinical instruction being handed down "from on high" and that the medical profession will "fossilize" like civil service. It was stated that a full reply to the government will be made when the 15,000 medical men in the armed forces turn in their questionnaires on the subject.

CORRECTION

Thymectomy for Myasthenia Gravis.—In the current comment with this title in THE JOURNAL for February 26, page 579, appears the statement "This assumption is supported by the frequency of cellular hyperplasia in the thymus in neurasthenia." The word neurasthenia should obviously have been myasthenia.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 12, 1944.

The Artificial Limb Center at Roehampton

The little Surrey village of Roehampton has become famous as the greatest center in Britain for the manufacture and fitting of artificial limbs. The work began in the first world war, when of 41,050 men who lost a limb 26,262 were treated there and supplied with their first and, in many cases, their second limb. After the armistice the institution was extended to accommodate general surgical and medical patients from the Ministry of Pensions Hospital in London and patients with facial wounds from Queen Mary's Hospital, Sidcup, but it still remained primarily for the benefit of men who had lost limbs in war. In this country there are now fourteen centers for limb fitting, and all their surgeons have been trained at Roehampton. Here also most of the progress in design and manufacture has been made. Thanks largely to Roehampton the modern artificial limb is of light and simple construction, permitting leg movements scarcely distinguishable from the natural gait. This highly specialized craft has been so perfected that the time between amputation and return to more or less normal life is greatly reduced. Provision is also made for occupational therapy, with gymnasium and workshops, and for the patient's economic and recreational rehabilitation.

The work has now been extended to amputation patients among civilians, and in the present war many civilians who have lost limbs as a result of German bombs have been treated. Recently a still wider field has been inaugurated. The limb fitting center, with its demonstration theater and consultation rooms, has been extended and the factories have been enlarged. It is proposed further that Roehampton should be a center for teaching the doctors of allied nations, many of whom are in England, the methods of manufacturing and fitting artificial limbs, so that the experience gained at Roehampton may help cripples everywhere.

Improved Vital Statistics

The astonishing fact that vital statistics have improved during the greatest war ever waged by this country has been reported more than once in previous letters to THE JOURNAL. A big increase in births for the quarter ended last September 30 has just been published. A total of 169,348 live births was registered, representing a birth rate of 16.2 per thousand per annum—the highest third quarter since 1930. Also the infant mortality rate—40 per thousand live births—was the lowest quarterly rate ever recorded. During the first nine months of 1943 521,858 live births were registered, compared with 494,171 in the same period of 1942.

In the third quarter there was a substantial fall in the number of marriages. The total of 81,454 was the lowest for any third quarter since 1918, while the rate, 15.6 persons married per thousand of population, was the lowest for any period since 1917. This fall is explained as a consequence of the great increase in the number of marriages which followed the outbreak of war. The death rate for the third quarter was low: 9.4 per thousand of population.

Commenting on these figures the physiologist Sir Leonard Hill says that the record low infant mortality is especially good. He attributes it to the work of advisory clinics and other health services. The birth rate of 16.2 per thousand is not high enough, he stated, though it represents a movement in the right direction. A birth rate of over 19 per thousand is required to maintain our population.

The Future of Pharmacy

At a recent meeting of the Pharmaceutical Society Sir Henry Dale, president of the Royal Society, discussed the effect of new discoveries on the future of pharmacy. Old fashioned dispensing to individual prescriptions would doubtless linger for a time, he said, but it was inevitable that the preparation of remedies required by progressive therapeutics would eventually be entirely by scientific, large scale manufacture. The role of the individual pharmacist would become little more than an intelligent retail distribution of ready made, centrally standardized products, he thought.

Rarely under present conditions of domestic practice could the physician obtain for his patient, or the patient receive through his physician, all that science offered in such growing profusion for the understanding of his illness and its effective treatment, Sir Henry stated. Unless the practitioner was to become a mere "sorting machine" to secure the transfer to hospital of every patient requiring scientific attention, he said, general practice must acquire such an organization that the common laboratory facilities which any modern hospital afforded could be made accessible to any practitioner who knew how to use them. A great number of new laboratory centers with well trained men would then have to be a feature of any adequate scheme, it was pointed out, and the sphere of the pharmacist would be largely transferred from his pharmacy to large laboratories in hospitals.

German Brutality to Russian Prisoners

The *Times* recently reproduced from the *Adelaide Advertiser* the statements of Warrant Officer Ian Sabey, a member of the editorial staff of the *Advertiser*, who was recently repatriated after thirty-two months' imprisonment in Greece, Crete and Germany. He stated that British prisoners in Germany have been witnesses of the greatest cruelties and sadistic treatment of Russian prisoners. When the time comes for British prisoners to make charges, even their horrible experiences pale into insignificance beside those of the tortured and starved Russians whose bodies lie in great pits around their prison camps. In October 1941 Sabey was in an Austrian camp, where he saw the arrival of the first consignment of Russians when the temperature was almost at the freezing point. At the sight a long, low cry of rage swept up from the French prisoners' quarters, and next came angry cries from the British. The Russians were so emaciated that they seemed more like animals than human beings, and many who were unable to walk were supported by others. The British prisoners were so sickened that their attitude became ominous, and guards chased them into their huts. When the Russians were stripped for a shower bath their bones were almost sticking through their infested skins. The guards used whips and kicked and man-handled them.

The British, who had been refused permission to help the Russians, now pushed the guards aside and removed the seriously ill and the dead on stretchers. The corpses were so light from starvation that three could be placed on a single stretcher. A Russian told Sabey that the party traveled for six weeks through Germany without being able to leave the cattle trucks in which they were herded. Of 1,200 on the train, 300 died. An English medical officer, Capt. A. Webster, whom the Germans sent to attend the Russians, made the heroic decision of remaining with them voluntarily when his time was up. A team of Australians, New Zealanders and English medical orderlies voluntarily worked under him.

Penicillin Expert to Help Russia

Professor H. W. Florey, famous for his work on penicillin, has gone to Russia to pass on his knowledge to Soviet surgeons. He recently directed the use of penicillin for the treatment of wounds in the Middle East and has presented a report thereon to the Medical Research Council and the War Office.

BRAZIL

(From Our Regular Correspondent)

Feb. 6, 1944.

Vital Statistics of Rio de Janeiro for 1943

Provisional vital statistics for the city of Rio de Janeiro for the year 1943 are now available and may be compared with the figures for 1941 and 1942 (THE JOURNAL, May 2, 1942, p. 96; April 10, 1943, p. 1238). The population of the city as of July 1, 1943 was 1,890,000. The total number of deaths from all causes was 32,694, giving an annual death rate of 17.30 per thousand of population, which is just below the rate for the previous year (17.54). Practically, there has been no change in the death rate during the last twelve years, after a constant and regular decline since the beginning of the century. From 25 per thousand for the period 1902-1906 the mortality followed a descending trend to 17.88 for the period 1927-1931. The number of live births registered in 1943 was 41,728, representing an annual birth rate of 22.10 per thousand of population, a continued improvement over the previous two years (19.28 per thousand for 1941 and 21.16 per thousand for 1942). The infant mortality rate was 146 per thousand live births, an improvement over 1941 (180 per thousand live births) and 1942 (153 per thousand live births). This decline in the infant mortality rate is mainly due to the increase in the number of births registered, which may be accounted for, in part at least, by efforts to better birth registration. The fetal mortality was 74.17 per thousand total births, a figure showing practically no change in comparison with the last few years. This is accepted by Brazilian sanitarians principally as a result of the still high prevalence of syphilis in the population. The number of deaths from causes related to pregnancy, childbirth and the puerperium was 264, corresponding to a maternal death rate of 6.33 deaths per thousand live births (7.75 in 1942).

The most important cause of death was tuberculosis, with a total of 6,157 deaths (5,989 from tuberculosis of the respiratory system), or 18.83 per cent of the number of deaths from all causes. The tuberculosis death rate of 325 per hundred thousand of population may be compared with a rate of 345 per hundred thousand in the period 1922-1926, 327 in 1927-1931, 315 in 1932-1936 and 327 in 1937-1941. Tuberculosis is still the greatest health problem in Rio de Janeiro. The rest of the "infectious and parasitic diseases" caused 10,295 deaths (31.49 per cent of deaths from all causes), an annual death rate of 545 per hundred thousand, as against about 100 per hundred thousand for the average of the largest cities of the United States. Of this total, 109 deaths were caused by typhoid, an annual death rate of 5.77 per hundred thousand (7.17 in 1941, 6.26 in 1942 and 7.10 in the period 1937-1941). The other principal infections were dysentery (mainly bacillary), measles, whooping cough, diphtheria, malaria, influenza, leprosy, epidemic meningitis, epidemic encephalitis, poliomyelitis and tetanus (about 50 per cent umbilical). Cancer, which caused 1,362 deaths, or 72.06 per hundred thousand (66.44 in 1942, and 67.34 in 1937-1941), has increased steadily as a cause of death since 1903-1907, when the mean annual death rate was 34.75.

The second most important group of causes of death is diseases of the digestive system, represented by 5,371 deaths, or 16.43 per cent of the deaths from all causes, which corresponds to a rate of 284 per hundred thousand of population (275 in 1941 and 277 in 1942). A majority (3,468) of these deaths were listed as "diarrhea and enteritis under 2 years"—the greatest contribution to infant mortality. An average of 38 per cent of the deaths in the age group 0-1 year in Rio de Janeiro is classified as due to diarrheal diseases. The number of deaths caused by appendicitis was 95 and the number caused by diseases of the liver and the biliary ducts was 481, corresponding respectively to 5.03 and 25.45 per hundred thousand. The third leading group of causes of death was diseases of

the circulatory system, represented by a total of 5,116 deaths, or 271 per hundred thousand. Of this total, 4,084 deaths were caused by diseases of the heart, a rate of 216 per hundred thousand. The annual death rate from diseases of the cardiovascular system was increased in Rio de Janeiro from 173 per hundred thousand for the period 1926-1930 to 308 in 1941 and 308 in 1942. In 1943, however, the rate decreased, perhaps because of the important changes in the latest revision of the International List of Causes of Death, now in full use.

Diseases of the nervous system caused 1,236 deaths, or 65.40 per hundred thousand, the largest contribution being from "intracranial lesions of vascular origin" (877 deaths, or 46.40 per hundred thousand). The number of deaths registered as caused by diseases of the respiratory system was 4,039, a rate of 214 per hundred thousand. Diseases of the genitourinary system caused 1,689 deaths, or 89.37 per hundred thousand. Of this total, the deaths due to acute and chronic nephritis were 1,286, or 68.04 per hundred thousand. Puerperal septicemia and infection was the cause of 94 deaths, or 35.61 per cent of the maternal deaths (1 death in 444 live births as against 1 in 282 in 1941 and 1 in 321 in 1942). Violent deaths were 1,071, or 3.27 per cent of the total of deaths from all causes, which corresponds to a rate of 56.67 per hundred thousand (66.46 in 1941 and 65.51 in 1942). Of this total, 235 deaths were due to motor vehicle accidents, or 12.43 per hundred thousand (17.92 in 1941 and 10.68 in 1942).

Brief Items

Dr. João Marinho, professor of otorhinolaryngology at the University of Rio de Janeiro and distinguished practitioner of the specialty, has been elected a member of the Academy of Medicine of Buenos Aires, Argentina.

Dr. Alvaro Pontes, associate professor of surgery at the University of Rio de Janeiro, left for London recently at the invitation of the British Ministry of Health to study special problems of war surgery.

The University of Rio de Janeiro is now giving four special summer medical courses on the semeiology of the diseases of the nervous system, heredity in medicine, diseases of the extrapyramidal nervous system and syphilis of the nervous system. Drs. A. Borges Fortes, Helion Povoá, A. Moraes Austregesilo and Aloysio Marques respectively are in charge of these courses.

The Brazilian Temperance League promoted an "antialcohol week," during which several leading physicians and educators held special meeting and delivered lectures in schools, clinics, hospitals, factories and military posts. The opening address was delivered over the radio by Dr. Henrique Roxo, director of the Psychiatric Institute of the University of Rio de Janeiro and president of the Brazilian League of Mental Hygiene.

Marriages

PAUL STAHL MERTINS JR., Montgomery, Ala., to Miss Anne Moss of Birmingham at Del Rio, Texas, February 12.

JOHN W. CATHCART, Winnsboro, S. C., to Miss Margaret Virginia Caughman of Columbia, February 21.

EDWARD BUIST WELLS, Nashville, Tenn., to Miss Rosemary Lamprakes of Rochester, N. Y., February 19.

WILLIAM HUGH HALL to Miss Rosemary Patricia Dickinson, both of Charleston, S. C., February 22.

HARRY VINCENT HANLEY, Brooklyn, to Miss Marie Joan Gallagher of Goshen, N. Y., January 30.

BRUCE A. HARRIS JR., Brooklyn, to Miss Joan Leigh Maddy in Dallas, Texas, February 21.

JAMES J. BAYER, Perrysburg, Ohio, to Miss Evelyn Maxine Orians of Carey, February 19.

ARTHUR E. SCHULTZ, Detroit, to Miss Betty Ann Kralik of Cleveland, December 11.

JOHN WILLIAM ROSE to Miss Pauline Mims, both of Birmingham, Ala., recently.

Deaths

Frederic William Schlutz * noted pediatrician, died in the Albert Merritt Billings Hospital, Chicago, March 8, aged 63, of decompensation due to heart disease.

Dr. Schlutz was born in Greene, Iowa, Nov. 10, 1880. He studied at Wartburg College, Clinton, Iowa, and graduated at the University of Maryland School of Medicine, Baltimore, in 1902. Subsequently he studied in Berlin, Strassburg, Kiel, London, Paris and at Harvard. He joined the faculty of the University of Minnesota Medical School, Minneapolis, in 1910, serving until 1912 as instructor in biochemistry. He then started teaching pediatrics, serving as instructor, assistant professor and professor and head of the department. He also was professor of pediatrics at the Graduate School at Minnesota. It was during this period that he founded the Minneapolis Infant Welfare Society. In 1930 he was named to the faculty of the University of Chicago School of Medicine as professor and head of the department of pediatrics, serving also as chairman of the Bobs Roberts Memorial Hospital for Children. The following year he was named the first Richard T. Crane professor of pediatrics.

Certified by the American Board of Pediatrics, Dr. Schlutz was a member of the American Pediatric Society, American Academy of Pediatrics, Society for Pediatric Research, American Biochemical Society for Experimental Biology and Medicine, American Society of Biological Chemists, American Institute of Nutrition, Society for Research in Child Development, Institute of Medicine of Chicago and the Minnesota Academy of Medicine. He was an honorary member of the National Academy of Medicine of the Republic of Argentina and of the pediatric societies of Mexico, Uruguay, Paraguay, Argentina, Colombia, Peru and Cuba. He was United States delegate in a number of Pan American child hygiene congresses between 1928 and 1942 and this year was to serve similarly at the second pediatric congress in Mexico. He had been a member of the executive committee of the Pan American Union. At the time of his death he was preparing to leave for an eighteen weeks good will mission in Latin America for the U. S. Department of State. He was a committee member of the White House Conference on Child Health in 1929-1930.

Dr. Schlutz was assistant medical chief in charge of contagious diseases at the Base Hospital, 12th Division, Camp Evans, in 1918. He had written numerous articles dealing with his specialty, independently and in collaboration with others, and concluding his year as chairman of the Section on Diseases of Children of the American Medical Association, 1932-1933, he wrote a review of the section covering the first fifty years of its development.

Randle Crater Rosenberger * Rahns, Pa.; Jefferson Medical College of Philadelphia, 1894; in 1894 assistant in outpatient department diseases of children and assistant demonstrator of histology at his alma mater, where he was from 1895 to 1898 assistant demonstrator of normal and pathologic histology and assistant in diseases of the heart and lungs, in 1898-1899 demonstrator of normal histology and bacteriology, in 1900 demonstrator of bacteriology, in 1902 associate in bacteriology, from 1904 to 1908 assistant professor in bacteriology and from 1909 to 1924 professor of hygiene and bacteriology, serving concurrently during most of this period as curator of the museum; from 1924 to 1941 professor of preventive medicine and bacteriology and since the latter date professor of immunology and bacteriology; in 1941 served as acting dean of the college; lecturer on hygiene at the Woman's Medical College of Pennsylvania; member of the Society of American Bacteriologists, the College of Physicians of Philadelphia and the Philadelphia Pathological Society; in 1910 member of the Milk Commission of Philadelphia and in 1916 the Pneumonia Commission of Philadelphia; served as assistant pathologist and director of the clinical laboratory at the Philadelphia General Hospital, pathologist to St. Joseph's Hospital and associate in bacteriology and pathologist to the Henry Phipps Institute; died February 21, aged 70, of myeloblastic leukemia.

Albert Franklin Tyler * Omaha; John A. Creighton Medical College, Omaha, 1907; formerly professor of roentgenology and physical therapy at the Creighton University School of Medicine; president of the Omaha-Douglas County Medical Society in 1918, the Omaha Roentgen Society from 1918 to 1920 and the Radiological Society of North America in 1920; a founder of the American College of Physical Therapy, later known as the American Congress of Physical Therapy, of which he was president in 1933; received the gold key award of the society in 1932; member of the American Roentgen Ray Society, secretary of the central section from 1916 to 1918; member of the American Radium Society,

Omaha Mid-West Clinical Society, British Roentgen Society and the Nebraska Radiological Society; fellow of the American College of Physicians; specialist certified by the American Board of Radiology, Inc.; for many years on the staffs of the Immanuel Deaconess Institute and Creighton St. Joseph's Hospital; author of "Roentgenotherapy" and editor of "History of Medicine in Nebraska"; for many years publisher and managing editor of the *Journal of Radiology*, later known as the *Archives of Physical Therapy*; associate editor of the *Nebraska State Medical Journal* from 1917 to 1919; a trustee of the Nebraska Wesleyan University; died February 25, aged 62.

Adolph O. Pfingst * Louisville, Ky.; Louisville Medical College, 1891; M.D., University of Berlin, 1894; in 1895 became assistant to Prof. Herman Knapp and house surgeon to the New York Ophthalmic Institute; professor emeritus of ophthalmology at the University of Louisville School of Medicine, where he had been professor of physiology, histology and bacteriology and professor of ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, International Society of Ophthalmology and the Pan American Congress of Ophthalmology; past president of the Kentucky State Ophthalmological Society and the Louisville Eye and Ear Society; fellow of the American College of Surgeons; director of the department of ophthalmology at the Louisville City Hospital from 1909 to 1930; member of the medical staffs of St. Joseph Infirmary, Norton Memorial Infirmary and Children's Free Hospital and the Kosair Crippled Children Hospital; member of the volunteer corps during World War I; author of "Textbook on Bacteriology" in 1898; served as associate editor of the *Kentucky State Medical Journal*; died February 25, aged 74, of coronary occlusion.

John van de Erve, Charleston, S. C.; Rush Medical College, Chicago, 1911; member of the South Carolina Medical Association and the South Carolina Academy of Science; professor emeritus of physiology at the Medical College of the State of South Carolina, where he had been professor of physiology since 1919 and for many years head of the department; chairman of the committee on buildings and grounds and member of the committee on curriculum at the college; formerly associate dean, professor and director of the department of physiology at the Marquette University School of Medicine, Milwaukee, and professor of physiology at the University of Alabama School of Medicine, Mobile; equipped and developed laboratories of physiology in Mobile, Milwaukee and Charleston; designed the building for physiology and pharmacology at Charleston; served as a lieutenant (jg) chaplain in the navy during World War I; also a Presbyterian minister; served as consul for the Netherlands; died February 15, aged 73, of coronary occlusion.

Sam Brock * Chicago; Johns Hopkins University School of Medicine, Baltimore, 1916; fellow of the American College of Surgeons; entered the Mayo Foundation, Rochester, Minn., as a fellow in surgery on July 1, 1919 and left the foundation in 1922; at one time associate in surgery, clinical assistant in surgery and instructor in surgery at the Northwestern University Medical School; formerly professor of surgery at the University of Georgia School of Medicine, Augusta; served as a major with the American Expeditionary Forces from 1917 to 1919, stationed at Base Hospital number 4; began active duty as a major in the medical corps, Army of the United States, in June 1942 and served for eighteen months in New Guinea during World War II; honorably discharged Sept. 29, 1943 because of ill health; on the staffs of the Passavant Memorial, Wesley Memorial and Edgewater hospitals; died in Rochester, Minn., February 11, aged 55.

Beveridge Harshaw Moore * Chicago; Rush Medical College, Chicago, 1912; associate professor of bone and joint surgery at the Northwestern University Medical School; specialist certified by the American Board of Orthopaedic Surgery, Inc.; member of the American Orthopaedic Association, the American Academy of Orthopaedic Surgeons, Chicago Orthopaedic Club, Institute of Medicine of Chicago, Chicago Literary Club and the American Association for the Advancement of Science; acting president of the Chicago Orthopaedic Society; a member of the committee on after-care and study of infantile paralysis, Visiting Nurse Association of Chicago; a major in the medical corps of the U. S. Army during World War I; chief surgeon, Shriners' Hospital for Crippled Children; served as attending orthopaedic surgeon at the Cook County and Children's Memorial hospitals; died February 29, aged 62, of coronary thrombosis.

William Byrdwill Peters, Appalachia, Va.; Hospital College of Medicine, Louisville, Ky., 1907; member of the Medical Society of Virginia; past president of the Wise County Medical Society; served during World War I; for many years medical director of the Appalachia Masonic Hospital; past president of the local chamber of commerce; director of the Portsmouth Navy Yard Clinic, Norfolk; for the past year served as chief surgeon of the Holston Ordnance Works at Kingsport, Tenn.; died in the Johns Hopkins Hospital, Baltimore, January 9, aged 61, of myocardial failure.

William Helweg Guillum ☉ Asbury Park, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1920; specialist certified by the American Board of Radiology, Inc.; member of the American College of Radiology; served as assistant roentgenologist, New York Post-Graduate Medical School and Hospital, Columbia University, and clinical assistant roentgenologist, New York Post-Graduate Medical School and Hospital, New York; on the staff of the Point Pleasant Hospital, Point Pleasant; died January 19, aged 59, of cerebral hemorrhage.

Leon Chappelle Agee, Whistler, Ala.; Harvard Medical School, Boston, 1943; an intern at the Jefferson Hospital, Roanoke, Va., where he died January 10, aged 22, of an enlarged thymus.

Francis Vernon Atkinson ☉ Washington, D. C.; George Washington University School of Medicine, Washington, 1915; died December 27, aged 69.

Mark N. Brooks, Springville, N. Y.; University of Buffalo School of Medicine, 1884; member of the Medical Society of the State of New York; died December 23, aged 82, of lobar pneumonia and general arteriosclerosis.

Guglielmo Cataldi, St. Louis; Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia, Italy, 1897; died January 11, aged 72, of cerebral hemorrhage.

John Wyman Dean, Glens Falls, N. Y.; Albany (N. Y.) Medical College, 1897; member of the Medical Society of the State of New York; died December 18, aged 75, of endocarditis, influenza, myocarditis and arteriosclerosis.

David Derow, New York; Columbia University College of Physicians and Surgeons, New York, 1905; member of the Medical Society of the State of New York; on the staff of Beth Israel Hospital; died in the Mount Sinai Hospital December 25, aged 63, of bronchopneumonia.

Louis Phillip Dosh ☉ Elmsford, N. Y.; Cornell University Medical College, New York, 1903; head of the civilian defense medical services in Elmsford; for many years on the staff of the Tarrytown Hospital, Tarrytown, where he died, January 16, aged 63, of adenocarcinoma of the urinary bladder.

George S. Durbin ☉ Erie, Pa.; Jefferson Medical College of Philadelphia, 1918; on the staff of St. Vincent's Hospital; died December 25, aged 49, of cerebral hemorrhage.

Galen Lamar Eads, Marshall, Texas; Southern Methodist University Medical Department, Dallas, 1913; member of the State Medical Association of Texas; health officer of Harrison County and served as chairman of the county board of health; served during World War I; died December 26, aged 51, of injuries received in an automobile accident.

George Hurlburt Felton, Berea, Ky.; University of the City of New York Medical Department, New York, 1878; oldest alumnus of the Brown University, Providence, R. I.; at one time professor of natural science and mathematics and acting president at the Leland University in New Orleans and professor of materia medica in the Medical Department of New Orleans University; died in the Berea College Hospital December 7, aged 97, of chronic myocarditis.

Aline Fox, New York; Columbia University College of Physicians and Surgeons, New York, 1943; died December 6, aged 25, of an overdose of sedative.

Claud Frank Gilbert, Corinth, Miss.; University of Tennessee College of Medicine, Memphis, 1914; on the staff of Corinth Hospital; died January 19, aged 53, of carcinoma of the right arm and axilla.

James Treat Gorton, Yonkers, N. Y.; Cornell University Medical College, New York, 1900; member of the Medical Society of the State of New York; for many years medical director of the Otis Elevator Company; emeritus surgeon on the staff of St. John's Riverside Hospital, where he died January 23, aged 67, of carcinoma of the bladder.

Herman E. Hayd ☉ Buffalo; McGill University Faculty of Medicine, Montreal, Que., Canada, 1881; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; past vice president, president and treasurer of the American Association of Obstetricians, Gynecol-

ogists and Abdominal Surgeons; consulting surgeon, Deaconess and Memorial hospitals; formerly gynecologist at the Erie County Hospital; died February 18, aged 85, of myocarditis.

William W. Heberton, Avon, N. Y.; New York Homeopathic Medical College, New York, 1885; died December 29, aged 80, of coronary occlusion; angina pectoris and arteriosclerotic heart disease.

Edward Almond Hoffman, Turtle Creek, Pa.; Jefferson Medical College of Philadelphia, 1896; died in the Woodville State Hospital January 16, aged 70, of chronic myocarditis.

Isaiah Louis Hoffman, Brooklyn; Cornell University Medical College, New York, 1899; died December 31, aged 64, of coronary thrombosis, arteriosclerosis and hypertension.

Charles Henry Hunt, Portland, Maine; Medical School of Maine, Portland, 1905; member of the Maine Medical Association; fellow of the American College of Surgeons; chairman of the civilian defense medical unit; visiting surgeon, Maine General Hospital; district surgeon, Canadian National Railways; died suddenly January 27, aged 63, of coronary thrombosis.

Edward Worthington Jackson, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; veteran of the Spanish-American War; during World War I served with the secret service; served on the medical staff of the Commonwealth Edison Company; for many years on the staff of the Norwegian American Hospital; died in the Veterans Administration Facility, Hines, Ill., January 30, aged 67, of coronary arteriosclerotic heart disease with angina pectoris.

John Warren James, Dover, Del.; Jefferson Medical College of Philadelphia, 1895; president of the Medical Society of Delaware in 1922; served on the staff of the Kent General Hospital; died in Fort Lauderdale, Fla., December 13, aged 70, of coronary occlusion.

Alexander M. Kan ☉ Gary, Ind.; Illinois Medical College, Chicago, 1906; served during World War I; captain, medical reserve corps, U. S. Army, not on active duty; on the staff of St. Mary's Mercy Hospital, where he died January 31, aged 61, of carcinoma of the urinary bladder and prostate.

Charles Stephen Kennedy, Logan, Iowa; John A. Creighton Medical College, Omaha, 1902; member of the Iowa State Medical Society; also a pharmacist; past president of the Harrison County Medical Society; served during World War I; adviser to the Harrison County Insanity Commission and medical officer for the Selective Service; died January 13, aged 75, of heart disease.

Philip A. Kennicott, Hagerman, Idaho; College of Physicians and Surgeons of Chicago, 1889; died in Twin Falls January 11, aged 79, of carcinoma of the kidney.

John Joseph Kerrigan, Fall River, Mass.; College of Physicians and Surgeons, Baltimore, 1906; member of the New England Otolological and Laryngological Society; a member of the school board and formerly a member of the board of health; served on the staffs of the Massachusetts General Hospital and the Massachusetts Eye and Ear Infirmary, Boston, and St. Anne's, Union and Fall River General hospitals; died January 6, aged 65, of pulmonary embolism and chronic myocarditis.

James Washington King, Averill Park, N. Y.; Albany Medical College, 1884; at one time health officer of Stockport; died January 11, aged 87, of cerebral hemorrhage and general arteriosclerosis.

Louis Anatole LaGarde ☉ Lieutenant Colonel, U. S. Army, retired, San Francisco; George Washington University School of Medicine, Washington, D. C., 1912; Army Medical School, 1917; entered the medical corps of the U. S. Army as a first lieutenant on Dec. 18, 1917; promoted as a captain on Nov. 24, 1918, major April 6, 1929 and a lieutenant colonel on April 6, 1937; later retired; served during World War I; a physical examiner for the United Air Lines; died in Stockton December 2, aged 58.

Sidney Locock Lasell, Pasadena, Calif.; Columbia University College of Physicians and Surgeons, New York, 1899; for many years a medical missionary in China; died January 20, aged 73, of coronary occlusion.

Georgianna Strunk Loffredo, Jamestown, N. Y.; Eclectic Medical College of the City of New York, 1905; died December 27, aged 85, of general arteriosclerosis.

William Rodman Manning, Fillmore, Calif.; University of Southern California College of Medicine, Los Angeles, 1902; member of the California Medical Association; formerly health officer; served on the staff of the Foster Memorial Hospital, Ventura; died January 10, aged 68, of cerebral hemorrhage.

Edward George Marks, Kearny, N. J.; University of the City of New York Medical Department, 1894; member of the Medical Society of New Jersey; past president of the Academy of Medicine of Northern New Jersey; on the staff of the Presbyterian Hospital, Newark; died in the West Hudson Hospital January 16, aged 85, of arteriosclerotic heart disease.

Leon R. McCrummen, La Grange, Ga.; Atlanta College of Physicians and Surgeons, 1909; member of the Medical Association of Georgia; served as city physician; died January 15, aged 64, of heart disease.

Francis Humphrey Merrick * Boston; Boston University School of Medicine, 1933; assistant physician of the Boston College football team; served on the staffs of the Boston City and St. Elizabeth's hospitals; died in the Evans Memorial Hospital January 17, aged 37, of perforated ulcer and peritonitis.

Ephraim B. Miller, Fountaintown, Ind.; Medical College of Indiana, Indianapolis, 1897; died in the Methodist Hospital, Indianapolis, January 16, aged 78, of myelogenous leukemia.

Herbert Lee Montague, St. Louis; Washington University School of Medicine, St. Louis, 1896; a captain in the U. S. Army during World War I; died in the Veterans Administration Facility, Jefferson Barracks, Mo., January 9, aged 73, of cerebral thrombosis and generalized arteriosclerosis.

John Stephan Nagel * Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; past president of the Chicago Medical Society; councilor of the Third District of the Illinois State Medical Society; formerly professor of genitourinary surgery at the Illinois Postgraduate Medical School; dean and professor of genitourinary diseases at the Chicago College of Medicine and Surgery; specialist certified by the American Board of Urology, Inc.; attending surgeon, Garfield Park Community Hospital; died March 2, aged 70, of coronary thrombosis.



MAJOR JOSEPH B. COOPWOOD,
U. S. Army, 1907-1943

Daniel W. O'Brien * Brooklyn; Loyola

University School of Medicine, Chicago, 1925; served on the staffs of the Hospital of the Holy Family, St. Mary's Hospital, Bay Ridge Hospital, Victory Memorial Hospital and the Kings County Hospital, where he died January 24, aged 55, of acute coronary thrombosis and arteriosclerotic heart disease.

Simeon Anatol Oleynick * Elizabeth, N. J.; Albertus-Universität Medizinische Fakultät, Königsberg, Prussia, Germany, 1910; specialist certified by the American Board of Dermatology and Syphilology; served on the staffs of the Alexian Brothers Hospital, Elizabeth General Hospital and St. Elizabeth Hospital, Elizabeth, St. Michael's and Beth Israel hospitals in Newark; died January 17, aged 57, of carcinoma of the rectum with metastasis to the liver.

Clarendon Etheredge Oxner, West Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1928; member of the South Carolina Medical Association; died in the South Carolina Baptist Hospital, Columbia, January 7, aged 43, of acute nephritis.

Warren Ellis Page, Cranston, R. I.; Dartmouth Medical School, Hanover, N. H., 1881; served as health officer and medical inspector of schools; died January 8, aged 85, of pneumonia.

William Pfannebecker * Sigourney, Iowa; Missouri Medical College, St. Louis, 1891; member of the American Association of Railway Surgeons; examiner for many life insurance companies; died in the University Hospital, Iowa City, January 8, aged 80, of chronic prostatitis and uremia.

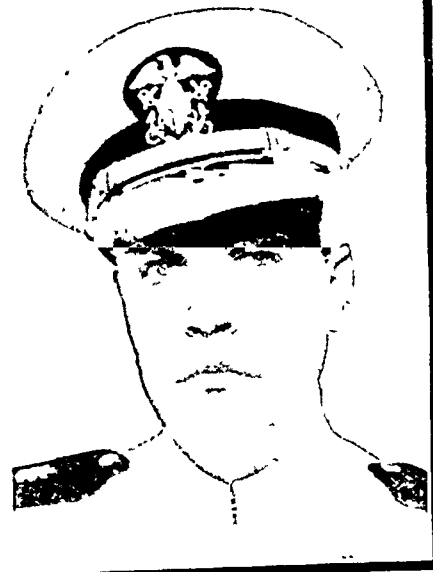
Eugene Adelbert Pond, Kansas City, Mo.; University Medical College of Kansas City, 1910; member of the Missouri State Medical Association; for many years physician for the Kansas City Stockyards Company and Commonwealth Aircraft, Inc.; formerly on the staff of Emergency Hospital, on the staffs of the St. Luke's Hospital, Trinity Lutheran Hospital and the Research Hospital, where he died January 10, aged 64, of pneumonia.

Louis Henri Renaud, Pawtucket, R. I.; School of Medicine and Surgery of Montreal, Que., Canada, 1904; died January 4, aged 63, of hypertensive cardiovascular renal disease, cardiac failure, uremia and hypertension.

Herbert Lowell Rich * Attleboro, Mass.; Tufts College Medical School, Boston, 1898; died in the Sturdy Memorial Hospital January 23, aged 78, of congestive heart disease.

Pettis Madison Richardson * Cushing, Okla.; Gate City Medical College, Texarkana, Ark., 1907; at one time associated with the Indian Service; city health officer; on the staff of the Masonic Hospital; died January 10, aged 65, of injuries received when the automobile in which he was driving was struck by a train.

Francis M. Roseberry, Keokuk, Iowa; College of Physicians and Surgeons, Keokuk, 1897; veteran of the Spanish-American War; died in the Graham Protestant Hospital January 6, aged 76, of cerebral hemorrhage.



LIEUT. EDWIN J. WELTE, U. S.
Naval Reserve, 1913-1943

Thomas Henry Shorb, Canton, Ohio; Ohio Medical University, Columbus, 1903; a captain in the medical corps of the U. S. Army during World War I; a member of the Canton Medical Library Association; at one time member of the city council and county coroner; served on the staff of the Aultman Hospital; died December 16, aged 68, of coronary occlusion.

Erra Delafield Stump, Charleston, W. Va.; Medical College of Ohio, Cincinnati, 1908; died March 1, aged 59, of cerebral hemorrhage.

Frank Lee Van Alstine * Jackson, Miss.; Hospital College of Medicine, Louisville, Ky., 1904;

on the staff of the Mississippi Baptist Hospital; at one time on the staff of the U. S. Marine Hospital, number 14, New Orleans; died January 2, aged 66.

Cecil Hendry Wilson * Bartow, Fla.; Atlanta College of Physicians and Surgeons, 1913; died December 18, aged 55, of carcinoma of the colon.

KILLED IN ACTION

Joseph Bennett Coopwood, Lockhart, Texas; Baylor University College of Medicine, Dallas, 1930; member of the State Medical Association of Texas; commissioned a captain in the U. S. Army (National Guard); extended active duty began Nov. 25, 1940 with the medical detachment, 141st Infantry, at Camp Bowie; later promoted to a major; killed in action in the North African area Nov. 21, 1943, aged 36.

Edwin Joseph Welte, Crookston, Minn.; University of Minnesota Medical School, Minneapolis, 1938; formerly fellow in surgery at the Minneapolis General Hospital; began active duty as a lieutenant (jg), medical corps, U. S. Naval Reserve, July 28, 1941 and later promoted to a lieutenant; killed in the battle of Tarawa in the Gilbert Islands when shell fire struck a landing boat, Nov. 20, 1943, aged 30.

Correspondence

FLUORIDE AND DENTAL CARIES

To the Editor:—Anent your stimulating editorial on fluoride and dental caries, together with the correspondence which it elicited in your issue of February 12, it seems that a geographic survey of disease in this country is much in order. For instance, are there other localities like Deaf Smith County, Texas, where dental caries is far below the average? And, conversely, in what districts do people have the poorest teeth? Even in Maryland, examination of army selectees has shown that those who come from the Eastern Shore have far better teeth than those who come from the western mountainous counties. And why stop with a consideration of teeth? There is a small region about 20 miles south of Rochester, N. Y., where the incidence of renal stones is high. A geologist called my attention to this condition and mentioned parenthetically that there was much gypsum in that area. The other side of this picture is represented by those localities that derive their drinking water from the Savannah River; gallstones and kidney stones are rare in those towns. Maine has been shown to have the highest incidence of cancer. Obviously there must be places in this country where the incidence of disease is less than in other places, and once such areas have been recognized the other problem, namely the economic problem of taking care of people who might gravitate to such regions in order to benefit from the natural advantages, may present itself for solution. But, first of all, why not have a geographic health survey to find out where any particular disease is common or rare? Such knowledge may be an important factor in helping to determine the cause and possible cure of that disease.

FERDINAND C. LEF, M.D., Baltimore.

STUDY OF INFANT DEATHS

To the Editor.—I have been interested in reading Dr. Edith L. Potter's article on "The Lessons to Be Learned from a Study of Infant Deaths" appearing in THE JOURNAL, February 5. The analysis of the causes of early infant deaths is illuminating, as is the account of the praiseworthy steps taken in Chicago to ameliorate these conditions.

In illustrating statistically the progress made in Chicago, however, I do raise the question of using the rates in the country as a whole as a background for comparison. Would it not be much more convincing to compare Chicago's position with other large cities—Detroit, New York, Cleveland, Philadelphia and others? When comparisons are made with the country as a whole, the cards are stacked against the smaller cities and the rural areas primarily because of lack of resources and facilities, the lesser opportunities for attracting professional skills and economic inability to take full advantage of the facilities that do exist.

Is it realistic to say that "what has been accomplished in this city can be accomplished anywhere if a sufficient number of people have a great enough desire." Is it just desire that is lacking, or is it in no small degree the wherewithal to satisfy that desire?

I am thinking of a rural county with low tax ratableity, 40,000 people and four doctors. How can they expect to provide good or adequate antepartum and obstetrical care? It isn't lack of desire. It is lack of ability to solve satisfactorily an array of tremendously difficult problems. Can the desire be realized until some power with greater ability than that of the county in question comes to improve the economic resources of the inhabitants?

Without in the slightest belittling the progress in Chicago, a comparison with the large cities would provide a better measuring stick. Chicago's infant mortality rate of 28.4 in 1942 is not greatly different from New York City's figure for that year, namely 28.8.

MARIE NYSWANDER, A.B.,
Cornell University Medical College,
New York 21.

ABBREVIATIONS IN PRESCRIPTION WRITING

To the Editor:—Will you give me the hospitality of space for a few words on the opinion expressed by your reviewer of L. C. Smith's "A Workbook of Elementary Pharmacology and Therapeutics" in your issue of Oct. 30, 1943?

I quite agree that abbreviations ought never to be used in prescriptions. They are a sign of laziness of spirit unworthy of a physician. I do not agree, however, when your reviewer says that Latin should not be used. Latin can be considered a universal language of pharmacology; its general use will do much for the necessary international application of medicine. Latin and the decimal system are the real expression of sound pharmacologic knowledge. As for the sentence "If they are Latin scholars it usually is at the expense of less knowledge of medicine and pharmacology" may I remind your reviewer of Mark Twain's lines "If your doctor know only medicine, you may be sure he does not know even medicine"?

Those physicians who know Greek and Latin and cultivate them, far from doing so at the expense of medical knowledge, improve, on the contrary, their medical skill by the clarity of logical thinking and the synthetic and intuitive approach to the patient which only a classical education gives.

A. P. CAWADIAS, M.D., F.R.C.P.,
50 Wimpole Street, London, W. 1.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, March 11, page 732.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: * Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, April 4-5. Sec., Dr. J. H. Patterson, 926 Security Bldg., Phoenix.

ARKANSAS: * March. Sec., Dr. D. L. Owens, Harrison. *Electric.* Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: * San Francisco, June 27-29. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento.

COLORADO: * Denver, April 4-7. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * *Endorsement* New Haven, March 2. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, March. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

ILLINOIS: * Chicago, April 4-6. Supt. of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.

INDIANA: * Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KENTUCKY: * Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blodgett, 620 S. Third St., Louisville.

MARYLAND: * Medical Baltimore, June 11-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 4th St., Baltimore.

MINNESOTA: * Minneapolis, April 18-20. Sec., Dr. J. E. D. P., 230 Lewis Medical Arts Bldg., St. Paul.

MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEW MEXICO: Santa Fe, April 10-11. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 415 S. Third St., Grand Forks.

OHIO: Endorsement, Columbus, April 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: Endorsement, Portland, April 22. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

RHODE ISLAND: Providence, April 6-7. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Mandeville St., Columbia.

TEXAS: Houston, March 22-24. Final date for filing application is March 10. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

WEST VIRGINIA: Charleston, May 1-3. Commissioner, Public Health Council, Dr. John F. Offner, State Capitol, Charleston.

WISCONSIN: Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 F. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. P. Conn, John B. Stetson University, Deland.

IOWA: Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, April 1-5. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, May 2-3. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Schools: Right to Expel Students Stealing and Selling Examination Questions: Necessity of Hearing Before Expulsion.—Questions of the examinations to be given in the College of Medicine of the University of Tennessee were stolen during the fore part of 1940 and were sold to students taking the examinations in question. The appropriate university authorities organized a student council, consisting of the Dean of the College of Medicine and twelve students, to investigate the situation and to make recommendations to the faculty. The council obtained evidence in the nature of statements from students connecting Sherman and Avakian, students in the College of Medicine, with the theft and sale of the questions, and the two students were called before the council. Both denied their guilt, but the council recommended their dismissal from the university. The two students were notified by the Dean of the College of Medicine to meet with the faculty executive committee on a certain day. Sherman refused to attend the meeting "because of business engagements." The committee expelled the two students from the university. Later Sherman asked for a rehearing, which was granted. At the rehearing there was read the substance of the testimony before the council against Sherman, and he was permitted to be heard in his own behalf. The same procedure was had with respect to Avakian. Apparently the committee did not recede from its previous position. Later the president of the university appointed a special committee from the board of trustees of the university to hear an appeal from the two students. At the meeting of this special committee the students were represented by coun-

sel. The substance of the testimony heard by the student council was read, and the students were permitted to testify and to introduce witnesses to rebut such testimony. However, they were not confronted then or at any other time face to face with their so-called accusers nor, obviously, were they given an opportunity to cross examine those persons. The special committee voted to affirm the action of the executive committee in expelling the students. Later separate mandamus actions were instituted on behalf of each student against the Dean of the College of Medicine, the president of the university, the members of the faculty executive committee and the special committee of the board of trustees to require the reinstatement in school of the students. From a decree in favor of the students, the defendants appealed to the Supreme Court of Tennessee.

In our opinion, said the Supreme Court, the hearings held prior to the final expulsion of the two students here involved were such as met the requirements of justice, both to the school and to the students, and the students were given a fair and reasonable opportunity to make their defense. While the governing authority in both public and private schools should have and does have the widest discretion in the matter of discipline, to the end that the honor and integrity of the school, as well as its scholastic standards, be maintained, that authority should recognize its responsibility to students whose honor and future destiny are within its keeping. We cannot agree with the contention of counsel for the students that a fair hearing prior to expulsion contemplates a trial as in a chancery court or in a court of law. We concur in the rule laid down in *Koblitz v. Western Reserve University*, 21 Ohio Cir. Ct. R. 144, as follows:

Custom, again, has established a rule. That rule is so uniform that it has become a rule of law; and, if the plaintiff had a contract with the university, he agreed to abide by that rule of law, and that rule of law is this: That in determining whether a student has been guilty of improper conduct that will tend to demoralize the school, it is not necessary that the professors should go through the formality of a trial. They should give the student whose conduct is being investigated every fair opportunity of showing his innocence. They should be careful in receiving evidence against him, they should weigh it, determine whether it comes from a source freighted with prejudice, determine the likelihood, by all surrounding circumstances, as to who is right, and then act upon it as jurors, with calmness, consideration and fair minds. When they have done this and reached a conclusion, they have done all that the law requires of them to do.

The governing authority, the court continued, of the College of Medicine has the inherent right to expel students for acts which are contrary to good morals, which tend to lower the standards of the school in any respect, and the authority is not required to follow technical rules or procedure in bringing to trial students who have committed an offense against the institution. An accused student should be informed as to the nature of the charges made against him and the names of at least the principal witnesses against him when requested, and he should be given a fair opportunity to make his defense. He cannot claim the privilege of cross examination as a matter of right. The testimony against him may be oral or written, not necessarily under oath, but he should be advised as to its nature as well as the persons who have accused him. Students should not be compelled to give evidence incriminating themselves or which might be regarded as detrimental to the best interests of the school. Every governing authority should impress on all students their duty to protect the honor and integrity of the school. As to a right to meet his accusers face to face in an investigation of wrongdoing, we cannot fail to note that honorable students do not like to be known as snoopers and informers against their fellows. A student informing against a fellow student should not be subjected to a cross examination, which could work to the informer's public humiliation. To subject the informer to cross examination would be subversive of the best interests of the school as well as harmful to the community.

Even though the right to study medicine and to practice medicine, continued the court, is a property right, it is a qualified right, qualified to the extent that one claiming the right cannot exercise it to the prejudice and injury of others and of organized society. The due process clause of the constitution has no application to an instance as here, where the governing board of a school has rightfully exercised its inherent authority to discipline students after due notice and a fair hearing and courts will not interfere with the discretion of school officials.

in matters affecting discipline of students unless there is a manifest abuse of discretion or where their action has been arbitrary or unlawful. Since such conditions are not present here, the court ordered the dismissal of the actions instituted by the students and in effect affirmed the order of the executive committee expelling them from the university. The Supreme Court of the United States subsequently denied certiorari.—*State ex rel. Sherman v. Hyman and State ex rel. Avakian v. Same*, 171 S. W. (2d) 822 (Tenn., 1942); 63 S. Ct. 1158.

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for Thoracic Surgery, Chicago, May 5-6. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
- Arizona State Medical Association, Phoenix, April 14-15. Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
- Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 9. Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- Association of State and Territorial Health Officers, Washington, D. C., March 20-23. Dr. G. C. Ruhland, 300 Indiana Ave., N.W., Washington, D. C., Secretary.
- California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Conference of State and Provincial Health Authorities of North America, Washington, D. C., March 22. Dr. A. J. Chesley, State Office Building, St. Paul, Minn., Secretary.
- Connecticut State Medical Society, Bridgeport, May 2-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Florida Medical Association, St. Petersburg, April 13-14. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia, Medical Association of, Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Iowa State Medical Society, Des Moines, April 21-22. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
- Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society, New Orleans, April 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Minnesota State Medical Association, Rochester, April 13-15. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
- Mississippi State Medical Association, Jackson, May 9-10. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, April 23-25. Mr. Raymond McIntyre, 634 N. Grand Blvd., St. Louis, Executive Secretary.
- National Tuberculosis Association, Chicago, May 10-12. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25-27. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, May 1-3. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- Northern Tri-State Medical Association, Toledo, Ohio, April 11. Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
- Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24-26. Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Sixteenth Annual Meeting, Held in Chicago, Nov. 5, 1943

The President, DR. JOHN WALKER MOORE,
Louisville, Ky., in the Chair

(Concluded from page 737)

Comparative Value of Blood Substitute Used for Experimental Shock

DR. C. C. SCOTT, H. M. WORTH, A.B., and E. B. ROBBINS, B.S., Indianapolis: Shock was produced in dogs by use of pneumatic venous tourniquets. In order to compare various blood substitutes effectively, animals were carried to the same level of shock. Unless given treatment, these animals all died. The volume of blood substitute injected was calculated as the amount necessary to decrease the hematocrit to the starting value. The fluid was given intravenously over a period of an hour immediately after removal of the tourniquets. Survival for two days was considered a cure. The blood substitutes tested were citrated dog plasma, heparinized dog plasma, 7 per cent gelatin, 3 per cent pectin, 3 per cent polyvinyl alcohol and 0.9 per cent saline solution. In each case 10 dogs were used, except that for citrated plasma and saline solution 20 animals were tested. The results were not significantly different for any of these blood substitutes. In another series of dogs carried to a deeper level of shock there was still no difference in the effectiveness of plasma and saline solution. In this type of shock, colloidal properties of the fluid used for treatment seemed to be of little importance in counteracting shock. It appeared that the effective part of the blood substitute was either water or saline solution.

DISCUSSION

DR. L. N. KATZ, Chicago: I believe that sodium chloride is the essence of treatment in the early stages of shock. When capillary permeability is altered so that the fluid can leak out, it is undoubtedly harmful. The practical value of these studies is that when one deals with soldiers at the front and when plasma is not quickly available, one can get good results by using saline solution in the early stages of shock. When the supply of plasma is limited, this procedure would save it for those cases in which trial by saline solution is not effective or for those cases in which shock is more advanced or in which hemorrhage has occurred.

DR. HEINRICH NECHELES, Chicago: Saline solution undoubtedly has its uses in early shock. I have produced more advanced traumatic shock in animals and treated them with saline solution, and all the animals died. I have repeated the experiments, and a high percentage of the animals treated with blood plasma or serum lived. I have taken as the index of the degree of shock the extent and the duration of the hypotension and the carbon dioxide content of the blood. I have found that with a carbon dioxide value and hypotension below certain levels none of the animals will survive regardless of the type of therapy. At higher levels the animals treated with colloidal substances, including plasma, will live. At these same advanced stages of shock saline solution leaves the circulation as fast as it is given. After a transient rise in the levels the blood pressure, carbon dioxide and plasma proteins drop more rapidly than before, and the downward course of the animals is accelerated. It is obvious that saline solution cannot replace plasma and colloid materials in the treatment of advanced shock. Each has its place, and one must be careful to specify the stage of shock under consideration.

DR. FRANK H. BETHELL, Ann Arbor, Mich.: I have produced traumatic shock in dogs, and the hemoconcentration precedes the drop in blood pressure. The burden cannot be carried by saline solution, but blood plasma will lead to recovery of the patient.

DR. CHARLEY J. SMYTH, Eloise, Mich.: During the past eighteen months Dr. S. D. Jacobson and I have determined the influence of the intravenous administration of a 5 per cent gelatin solution on the plasma volume in cases in which no detectable cardiovascular disease was present. A total of fifty-six injections of gelatin have been studied in 45 cases. The plasma volume is successfully elevated in all cases, and this elevation is maintained for an average of four hours. The average total

amount of gelatin recovered from the urine after forty-eight hours was 80 per cent of that injected. We have no evidence to indicate that gelatin is metabolized. In an effort to determine whether gelatin was effective in the treatment of cases of surgical shock we have used it in 30 cases and in all of them there has been a satisfactory clinical improvement in the blood pressure and in the rate and volume of the pulse. These observations indicate that this substance, which is readily available, can be given safely, is stable, is nonantigenic and warrants further clinical trial as a plasma substitute.

DR. NECHLES: Have you encountered plasma reactions in your dogs and have you had any difficulty from dog plasma? Dog plasma is often toxic, and consequently I was wondering if you had controls with injections of whole blood.

DR. SCOTT: In answer to Dr. Necheles, of 20 animals given citrated plasma, 10 received pooled plasma and the others were given unpooled plasma. Two dogs died during infusion, possibly from plasma reactions. However, they were excluded from the results. No reactions were observed in any other animals. Concerning the question of a possible relation between hemoconcentration and blood pressure fall, I reported to this meeting last year that we were unable to find any correlation in this respect. In dogs subjected to a shock procedure and given no treatment, there was no difference in degree of hemoconcentration in animals which died or recovered spontaneously. Hemoconcentration occurred mainly in the first two hours of the experiment. We do not claim that these results are a final answer to the problem of blood substitutes. Evaluation of treatment in shock is difficult. Our findings are based on experimental procedures different from those of other investigators; consequently, comparisons are difficult. It would be unfair for us to maintain that our results would hold true in other forms of shock.

DRS. R. H. LYONS, S. D. JACOBSON and JOHN NELKIN, Ann Arbor, Mich.: Comparisons have been made of the percentage change in hematocrit serum protein concentration, total circulating protein and red cell mass with the plasma volume by means of regression lines and the correlation coefficients.

Penicillin: Clinical Study of Its Therapeutic Effectiveness

DRS. PAUL O. HAGEMAN, SAMUEL P. MARTIN and W. BARRY OOD JR., St. Louis: As a part of cooperative investigation directed by the Committee on Chemotherapeutic and Other Agents of the National Research Council, 22 patients were treated with the sodium salt of penicillin. The drug was given intravenously every two to four hours in doses varying from 10,000 to 20,000 Oxford units. When intravenous injections were not practical, the intramuscular route was employed and individual doses were adjusted to the size of the patient and the severity of the infection. Intrathecal injections were used in the treatment of meningitis. Whenever localized and accessible foci of infection developed, penicillin was introduced directly into the site of infection. In a small group of patients with local infections the treatment was limited to the local use of the drug. The penicillin treatment was limited in most cases until signs of infection had subsided and the temperature had been normal for several days.

Nine patients with staphylococcal septicemia were treated, and all but 1 recovered. The 8 survivors included a child with purulent pericarditis, whose blood yielded 200 staphylococcus colonies per cubic centimeter, a young boy with 140 colonies per cubic centimeter of blood and acute osteomyelitis of the pelvis, and an infant with empyema and blood culture showing innumerable staphylococci. The 1 patient who failed to survive was suffering from an acute staphylococcal endocarditis and died following the rupture of a brain abscess.

Four patients with staphylococcal infections without bacteremia responded favorably to penicillin therapy. The infections in this group of cases were pneumonia and empyema, a post-operative wound infection, a chronic osteomyelitis of the humerus and a chronic osteomyelitis superimposed on a tuberculous hip infection. The last infection responded only temporarily to the chemotherapy.

Two patients with pneumococcal infections likewise responded favorably to penicillin treatment. The first patient entered the hospital with mastoiditis, lateral sinus thrombosis, petrositis,

meningitis and bacteremia due to the type III pneumococcus. In spite of the fulminating character of the infection she recovered completely following mastoidectomy, ligation of the jugular vein and penicillin treatment given intravenously, intrathecally and into the mastoid wound. The second patient was suffering from early empyema due to the type V pneumococcus. Penicillin was injected into the pleural cavity, and the infection subsided without surgical drainage.

Penicillin was also used with success in the treatment of a mixed postpneumectomy infection of the pleural cavity. One patient with agranulocytic angina recovered without complication following the use of penicillin.

Unfavorable results were encountered in the treatment of 3 patients with anaerobic streptococcal infection, all of whom ultimately died. Two patients with chronic pulmonary suppuration showed no response to the parenteral administration of penicillin.

Toxic reactions to penicillin were not observed. Although the therapeutic results were most gratifying in the treatment of even the most severe bacterial infections, it is suggested that they may be improved by the use of somewhat larger doses of penicillin than were used in the present study.

The Calcium Salt of Penicillin

DRS. WALLACE E. HERRELL and DONALD R. NICHOLS, Rochester, Minn.: We have studied a calcium salt of penicillin which was available in this country. Using the tissue culture method for the study of cytotoxicity of bactericidal agents previously described by Heilman and one of us (Herrell), it has been found that the calcium salt we used is less toxic for cellular elements than the now commonly used and completely safe sodium salt. The calcium salt in the dry state in sealed ampules kept away from the light at room temperatures for fifty-six days lost no potency. Further studies have also been made concerning the toxicity of the calcium salt. We have administered the calcium salt both intravenously and intramuscularly. The calcium salt has been found entirely satisfactory for the treatment of infections in human beings. Twelve cases of moderately severe and severe infections are included in the report. In all 12 the continuous intravenous drip technic was employed. The largest daily dose of the calcium salt of penicillin that was administered was 44,000 Oxford units. Since Florey and his associates considered therapeutic intravenous or intramuscular use of the calcium salt inadvisable, it seems possible that the calcium salt investigated by them differed in some way from the preparation studied by us.

DISCUSSION

DR. C. J. WATSON, Minneapolis: Dr. Wesley Spink is unable to be here, but here is a brief summary of his findings: The sodium salt of penicillin has been evaluated at the University of Minnesota Hospital in the treatment of 38 patients with various types of bacterial infections. Penicillin rapidly sterilizes the blood stream of patients having acute staphylococcal and hemolytic streptococcal bacteremia. While staphylococcal bacteremia may be controlled, associated bone lesions may appear to progress during and after therapy. Nevertheless the bones appear to recalcify without demonstrable residual infection. Penicillin was remarkably effective in the treatment of 5 cases of gonorrhea. Two of the 5 patients had a complicating tenosynovitis and arthritis, which was controlled with penicillin. Penicillin produced a remarkable therapeutic effect in an instance of pneumococcal bacteremia and empyema refractory to sulfonamide therapy and in 1 case of lung abscess of unknown cause. The latter case has not been followed long enough to determine the eventual outcome. Penicillin was without effect in the treatment of 3 patients with subacute bacterial endocarditis and 2 patients with pneumococcal meningitis. The local use of penicillin on 2 patients with staphylococcal skin lesions produced only temporary improvement. This mode of therapy merits further investigation. The treatment of 38 patients with penicillin was uncomplicated by toxic manifestations with the exception of 1 patient, who noted flushing of the face and who developed thrombophlebitis at the site where the material was injected.

DR. DOUGLAS DEEDS, Denver: I have treated 3 patients with the sodium salt of penicillin. My first case should not be counted as a penicillin failure, although it ended fatally. Fifty thousand Oxford units of penicillin was left over in solution in 1,000 cc. of isotonic solution of sodium chloride. I kept it in the ice box

for a little over five days and gave it by continuous intravenous drip over a twenty-four hour period to a patient in the forty-second day of his intractable sulfonamide resistant gonorrhea. The response was dramatic. Within twenty-four hours he was cured, left the hospital a few days later and has had no recurrence. The third patient was a boy with an acute osteomyelitis of the humerus complicated by staphylococcal septicemia. He was in poor condition, and sulfonamide therapy had not controlled his infection. Penicillin swung the tide in his favor, and he is now apparently well on the road to complete recovery. I am sure that he would have died without penicillin.

DR. E. L. DEGOWIN, Iowa City: A patient with septicemia due to hemolytic *Staphylococcus aureus* was moribund at the time she received penicillin. She had a large liver and was deeply jaundiced. There were 3,500 organisms per cubic centimeter in the blood stream. She was given 160,000 Oxford units of penicillin at one time. Four hours later there was less than 1 organism per cubic centimeter of blood. The patient then died of hepatic insufficiency. Only a few viable organisms could be cultured from the abscesses in the kidneys.

LIEUT. COMDR. D. H. ROSENBERG (MC), U.S.N.R., U. S. Naval Hospital, Great Lakes, Ill.: I should like to ask Dr. Hageman what dose of penicillin he used in the treatment of his patients with meningitis, and whether or not he noticed any reaction from the penicillin when used intrathecally. A patient with a septic form of scarlet fever complicated by acute otitis media had received prolonged sulfadiazine therapy without any beneficial effect. Fever had persisted, and on the eighteenth day of admission drowsiness, motor aphasia and right hemiparesis gradually appeared, followed later by recurrent colonic convulsions. The temperature rose to 105.4 F. A diagnosis of cerebral abscess (left temporofrontal) was made. He was given penicillin in doses of 40,000 Oxford units every two hours for two days. The dose was then reduced to 20,000 units every three hours and later to 10,000 units every three hours. His condition progressively improved, and the temperature returned to normal on the sixth day of therapy. A total of 2,360,000 Oxford units was used. This patient ultimately made a complete recovery. Comdr. L. L. Veseen has used penicillin in a number of cases of chronic gonorrheal urethritis and prostatitis which had been refractory to sulfonamide therapy. Within a few hours the urethral discharge diminished and the patients were fit for duty in two to four days. Similarly, in patients with sulfonamide resistant gonorrheal arthritis penicillin produced evident improvement in the joint symptoms within six to eight hours, and the temperature and pulse returned to normal within forty-eight hours.

DR. SPAFFORD ACKERLY, Louisville, Ky.: Have the authors had experience with chronic osteomyelitis?

DR. HAGEMAN: In answer to the question about intrathecal dosage, we injected 10,000 units intrathecally and observed no untoward reactions. Anaerobic streptococcal infections did not do well in our hands. It is our belief that these were undertreated. We did have 2 cases of chronic osteomyelitis, both of which cleared up under penicillin treatment. I should like to ask Dr. Herrell about dosage. It has struck me that the doses he employed have been smaller than we used. I wonder if he feels that we are overtreating our patients.

DR. HERRELL: As long as a solution of the sodium salt is kept in the ice box in a closed container, it does not lose potency as rapidly as is commonly believed. I have kept solutions of the sodium salt at ice box temperatures ($+5^{\circ}\text{C}$) for over a month with little, if any, loss of potency. The same is true of the calcium salt in solution. One should not therefore throw away solutions of penicillin that have been kept for a few days at ice box temperatures. Solutions of either of the salts kept at room temperature do lose potency rather rapidly. The sodium salt, even in the dry state, is not very stable at room temperatures, whereas the calcium salt appears to lose no potency at room temperature for a period of approximately two months. It is difficult to make final statements concerning the most desirable daily dose of penicillin for the treatment of infections. It is my feeling that the amounts I have used are satisfactory in most instances when the material is given by the intravenous drip method. Failures are sometimes accredited to inadequate

amounts of the material being used. On the other hand, the unsatisfactory results cannot all be explained on the basis of inadequate therapy. Regardless of how much penicillin is given, there are complications which develop in the treatment of sepsis which cannot be overcome by the chemotherapeutic agent regardless of how much is employed. There has been a feeling among some investigators that it is necessary to give penicillin to the point where it can be demonstrated in the blood stream by the methods now available for identifying it. When enough penicillin is present in the serum of patients being treated with penicillin to demonstrate its presence by these methods, the amount is far in excess of ordinary therapeutic requirements. This belief has received some confirmation in a recent communication from Fleming. A communication from Florey also is confirmatory. He found that when a patient has been given 100,000 units of penicillin in twenty-four hours by the intravenous drip method for acute sepsis the serum may be diluted a half with isotonic solution of sodium chloride and still there is present a complete inhibition of the test inoculum. This is merely a way of saying that 100,000 units a day is twice as much as is necessary with the intravenous drip treatment. For this reason I have rarely used more than 60,000 units a day. These opinions cannot be considered as final, but the whole question of dose should be carefully examined. If one can obtain satisfactory therapeutic results with 40,000 to 60,000 units in twenty-four hours instead of 100,000 to 200,000 units, it will mean that much penicillin saved for another patient.

Renal Damage Due to Sulfonamides

DRS. FRANCIS D. MURPHY, JOSEPH F. KUZMA, THEODORE Z. POLLEY and JOHN GRILL, Milwaukee: Kidney damage due to sulfonamides may result from the nephrotoxic action of the drug as well as from mechanical obstruction following crystal formation. Fourteen patients were studied, and the clinicopathologic results are reported here.

In 8 cases sulfathiazole was used, in 3 sulfadiazine, in 2 sulfanilamide and in 1 sulamyd. The doses of the drugs were given according to the accepted methods. In 5 of the 14 cases observed there was a mild albuminuria before the use of sulfonamides, and in 9 no evidence of kidney disorder. The first evidence of serious kidney disease after the use of sulfonamides was oliguria in 5 cases and anuria in 1 case. In the remaining 8 cases the first signs consisted of heavy albuminuria, many red blood cells, pus cells and casts. Other evidences of renal impairment were generalized edema in 1 case and some nitrogen retention in all cases. In 5 cases the onset was on the fifth day after the beginning of treatment. In 2 instances it occurred on the first day, and in another 2 on the third day. In the other cases the earliest signs of kidney damage occurred on the second, fourth, seventh, eighth and ninth days respectively. Blood levels at the time of recognition of kidney injury varied from 3.9 to 16.7 mg. per hundred cubic centimeters. Uremia due to sulfonamide intoxication caused death in 6 cases. Streptococcal septicemia was responsible for one death: (1) lobar pneumonia with lung abscess, (2) sepsis and generalized peritonitis after cesarean section, (3) cirrhosis of the liver and bronchial pneumonia, (4) glomerulonephritis superimposed on diabetes and (5) bronchopneumonia with massive lung collapse. In the other case, decapsulation of the kidney was successfully done and a section removed for biopsy.

The pathologic changes in the kidney attending sulfonamide therapy may be divided into two main groups; the first results from mechanical damage to the kidney, and the second from the toxic action of sulfonamides on the renal parenchyma.

DISCUSSION

DR. FRANCIS D. MURPHY, Milwaukee: When so-called nephrotoxic lesions occur in the kidney there is difficulty in healing them. Formerly it was believed that diminishing output of urine was fair warning that the kidney was badly damaged, and the corollary was that with diminishing oliguria the kidney damage had begun to heal. We are not sure that this holds good in the sulfonamide nephrotoxic kidney. Albuminuria is not a strict contraindication to the use of these drugs. There are cases of acute nephritis in which albuminuria disappeared under the use of sulfonamides.

DR. C. J. WATSON, Minneapolis: With sulfanilamide and sulfapyridine it was relatively unimportant whether the urine was alkaline or acid. It is entirely different with sulfadiazine and sulfamerazine. Dr. Wendell Hall and Dr. Wesley Spink at the University of Minnesota Hospital have been able to maintain blood levels of 40 to 60 mg. per hundred cubic centimeters of these compounds for a number of days without any evidence of renal damage if the pH of the urine is kept above 7.0 continuously. This is achieved by giving sodium bicarbonate frequently and in adequate amount.

DR. SPATFORD ACKERLY, Louisville, Ky.: I should like to ask how frequently drug rash and drug fever preceded these reactions.

DR. ARMAND J. QUICK, Milwaukee: Is it not possible to look on this untoward action of the drug as being similar to that produced in the liver by cinchophen after sensitivity to that drug has been produced? In other words, can we consider the kidney as having become sensitized?

DR. K. K. CHEN, Indianapolis: In experimental animals sulfanilamide does not produce renal lesions. We have incorporated this drug in the food to the extent of 5 per cent. Some animals will die, but we cannot find any kidney lesions. Sulfapyridine or sulfadiazine given in the same manner uniformly produces renal damage. In clinical literature I have gained the impression that it is rare to have kidney lesions with sulfanilamide. I should like to be informed how often the authors have encountered renal damage as a result of sulfanilamide therapy.

DR. KUZMA: Precipitation of the sulfonamides is one thing and nephrotoxic action on the kidney is another. They may be present at the same time, or one may follow the other. Many cases of crystalluria followed a nephrotoxic condition. If alkalinity of the urine is maintained, it will prevent crystallization of the sulfonamides. On the other hand, it does not prevent the nephrotoxic complications. The changes we observed were minimal. However, simple tubular degeneration and glomerular swelling do occur even with sulfanilamide.

Gold Toxicity in Relation to Gold Salt Therapy for Rheumatoid Arthritis

DR. R. H. FREYBERG, W. D. BLOCK, PH.D., and W. S. PRISON, PH.D., Ann Arbor, Mich.: To learn more concerning tissue damage which might result from gold, rats were injected with equivalent amounts of gold contained in compounds with grossly different chemical and physical properties. Results showed that soluble gold salts (gold eliminated chiefly in urine) when given in large amounts (much larger than compared with therapeutic doses) invariably cause severe damage to renal tubules which contain large amounts of precipitate of the heavy metal, moderate glomerular damage and albuminuria. The severity of pathologic changes was in direct proportion to the amount of gold injected. No other organs showed any important pathologic change. Oil suspensions of crystalline gold salts produced renal lesions in proportion to the solubility of the salt or the availability of the gold. Colloidal gold preparations (gold largely retained) caused no important renal disorder but produced livers and spleens packed full of the heavy metal phagocytized in the reticuloendothelial cells. The parenchymatous cells of the respective organs were damaged in proportion to the amount of phagocytosis. With all the preparations studied the histologic changes were proportional to the amount of gold found (by chemical analysis) in organs of rats injected with gold preparation in identical manner.

These animal studies indicate that gold may act as a parenchymatous poison and show the nature of the pathologic change. The possibility that in some patients a difference in absorption or excretion rate might account for toxicity was considered. When it became possible to determine accurately plasma concentration and urinary content of gold we hoped that chemical measurements might control treatment to allow adequate dosage for satisfactory therapeutic effect and prevent overdosage toxicity, comparable to chemical control of thiocyanate therapy for hypertension. This has not been possible. Toxicity has developed in some patients having plasma gold concentration and urinary excretion of gold less than, comparable to or in excess of average values for patients similarly treated, without toxicity. Skin biopsies from portions of the integument showing gold dermatitis contained gold in amounts comparable to normal skin

of nontoxic patients similarly treated. Gold toxicity developed in arthritic patients with normal as well as deficient blood ascorbic acid.

It appears therefore that gold toxicity in human beings is seldom due to parenchymatous poisoning effects except in some cases of nephritis. There are many indications that clinical toxicity is most often an allergic type of reaction. Patch tests using soluble salts commonly employed in treatment failed to indicate skin sensitivity in the patients who had dermatitis or other types of toxic reactions. Elemental gold and the chemical combinations of gold used in treatment seem not to be responsible for an allergic toxic reaction. Because gold injected in any form is found to circulate in intimate combination with serum protein almost entirely it was suggested that a gold proteinate may be allergenic in "toxic individuals." Intradermal injections with mixtures of gold salts and human serum or plasma (containing gold in an amount comparable to that usually found during treatment and some mixtures with tenfold gold concentration) produced no more positive skin reactions in patients with clinical gold toxicity than in gold treated patients without toxicity or other control subjects.

The nature of the suspected allergen responsible for most instances of gold toxicity remains obscure. The major factor of clinical importance in regard to toxicity from gold used in the treatment of arthritis is the speed of administration of the drug.

Treatment of Multiple Sclerosis by the Intravenous Administration of Histamine

DRS. BAYARD T. HORTON, H. P. WAGENER, J. A. AITA and H. W. WOLTMAN, Rochester, Minn.: Of 24 among 102 patients the disease may be regarded as acute; that is, the patients had had symptoms of multiple sclerosis for a period of a few weeks to a month or two, whereas the remaining 78 patients had had symptoms from one to twenty years. Many of the patients who had an acute form of the disease were more incapacitated than those who had a chronic form, as evidenced by the fact that many were brought to the clinic on stretchers and in wheelchairs. Their ages ranged from 16 to 58 years. Fifty-two were males and 50 were females.

Treatment consisted in the daily intravenous administration of 2.75 mg. of histamine diphosphate in 250 cc. of isotonic solution of sodium chloride at the rate of 30 to 90 minims (2 to 6 cc.) per minute, depending on the tolerance of the patient. The average patient received forty to fifty such injections; the minimal number was thirteen and the maximal number was three hundred. The prompt improvement that follows histamine therapy probably results from vasodilatation in the central nervous system.

Of the 24 patients who had an acute form of the disease, 18 are essentially clinically well, 1 has shown 70 per cent improvement, 1 50 per cent improvement and 1 40 per cent improvement, and 3 have shown no improvement. Two of the latter 3 are still receiving treatment.

Of the 78 who had an advanced or chronic form of the disease, 36 have shown varying degrees of improvement, ranging from 10 to 95 per cent. The remaining 42 patients have shown no objective improvement, although many were subjectively improved.

In subjects with ocular manifestations, such as the loss of vision and paralysis of the ocular muscles, the recovery seems to have been more rapid and complete with histamine therapy than we have observed in other forms of therapy.

We have given a total of six thousand injections without any ill effects except that 1 man, aged 20, had an acute gastric ulcer develop after thirteen injections had been administered. It healed completely within twelve days. Symptoms of multiple sclerosis disappeared. The patient previously had received twenty-four intravenous injections of typhoid vaccine in three months without any apparent improvement.

No type of therapy will be wholly effective in cases of advanced multiple sclerosis in which gliosis has occurred. Spontaneous remissions occur in many instances, so that it is difficult at present to evaluate fully this type of therapy. Early diagnosis is important and, if treatment is carried out before irreversible changes occur in the central nervous system, one may accomplish a great deal.

DISCUSSION

DR. H. P. WAGENER, Rochester, Minn.: Here is an interesting experimental therapy that permits the patient to be ambulatory as opposed to the confining routine of typhoid vaccine treatment, for example. It is carried out without danger and easily administered. We have been impressed by the prompt relief from neurologic signs and symptoms in certain cases at Dr. Horton's laboratory. Yet we know that the disappearance of signs and symptoms is one of the spontaneous and most characteristic features of multiple sclerosis itself. Practically every report of a new treatment for multiple sclerosis is colored with favorable, if not even enthusiastic, presentation of data. These cases have been followed only fifteen months at the most. It will take at least five years to evaluate fully the effect of this treatment on a large number of patients, preferably over a hundred in number.

DR. J. A. AITA, Rochester, Minn.: In a person suffering from multiple sclerosis, retrobulbar optic neuritis may develop in an acute or in a chronic progressive form. In the acute form, with abrupt onset and rapid loss of vision even to the point of complete blindness, a tendency to spontaneous recovery is present in the majority of cases. Employment of some type of vasodilator therapy appears to shorten the period of disability and distinctly improves the visual end results, especially in cases of severe or total primary loss of vision. Histamine given intravenously has proved to be an adequate and highly satisfactory substitute for the methods of treatment employed formerly, notably typhoid vaccine or other forms of foreign protein. It is more universally applicable, is less discommoding to the patient, does not necessitate hospitalization and, on the average, results in a more rapid and complete recovery of vision. The prognosis for recovery or maintenance of vision in the chronic progressive form of retrobulbar neuritis has always been poor in spite of the employment of any of the suggested forms of treatment. Administration of histamine intravenously has resulted in moderate improvement of vision in some cases. In the main, however, this improvement has proved to be only temporary. The nystagmus and paralyzes of conjugate ocular rotations and of individual eye muscles occurring in patients with multiple sclerosis cause considerable disability, especially when they are of rapid or sudden onset. I have noted the rapid return to essentially normal of the strength and balance of the ocular muscles which occurs in most instances under histamine therapy and the consequent improvement in the coordination of the patient in walking and in occupations or pursuits requiring use of the eyes.

DR. THEODORE L. SQUIER, Milwaukee: This presentation has been of special interest because of the similarity of histamine and allergic reactions and because of clinical improvement observed in 2 patients seen in 1938 and 1939, in each of whom a diagnosis of multiple sclerosis had been made. In the first patient studied for an allergic etiology of thrombocytopenic purpura a diagnosis of multiple sclerosis had been made eight years previously, and symptoms were present at the time of study. The second patient seen because of migraine present since childhood had had relatively recent manifestations of multiple sclerosis in which diagnosis neurologic consultants had concurred. Clinical food sensitivities were demonstrated in both patients, and in both not only were the presenting symptoms of purpura and migraine respectively relieved by specific food avoidance but, in addition, striking improvement occurred in the symptoms of multiple sclerosis. Because of dramatic and long continued improvement, it was felt justified in December 1942 to make an allergic study of another patient who had an acute, rapidly progressive multiple sclerosis of five months' duration and in whom there was a background of eczema, asthma and recent recurrent urticaria. When seen, she was unable to walk, had considerable visual disturbance and considerable impairment of speech. Following specific food eliminations she made a complete subjective and objective recovery within a period of about three months, so that she was able to return to all her normal activities. Recent work, especially that of Putnam and his associates, has suggested that vascular abnormalities may be fundamentally responsible for the pathologic changes occurring in multiple sclerosis; and these changes are essentially identical with those described by Abel and Schenck in the living blood vessels of rabbits during anaphylactic shock. There is a plausi-

ble basis for an allergic etiology, which if proved true even for only part of the cases, is an important contribution to management. Competent allergic investigation should precede histamine therapy. Recently I have seen 2 patients each of whom had been given intravenous histamine therapy elsewhere, who had relapses during the course of such therapy. My belief is that histamine therapy for most allergic conditions is disappointing.

DR. HORTON: We think of multiple sclerosis as a primary vascular disorder of the central nervous system with secondary changes in the nervous and interstitial tissues. As to what role allergy plays, we do not know. However, we have noted the association of hives and the onset of symptoms of acute multiple sclerosis in 1 instance. The whole problem resolves itself around the treatment of the acute phase. Early diagnosis is important, and treatment should be instituted before irreversible changes occur in the central nervous system. In cases in which the disease is advanced and the nerve elements have been replaced by neuroglia, no type of therapy will help. It may require years to evaluate histamine therapy in multiple sclerosis, but it is interesting to note that the first 3 patients so treated have remained clinically well for more than a year.

Effect on Carbohydrate Metabolism of Pork Adrenal Cortex Extract

DRS. CYRIL M. MACBRYDE and F. A. DE LA BALZE, St. Louis: In 5 of 26 of our patients with Addison's disease, hypoglycemia has been severe enough to cause frequent symptoms, and muscular weakness has been prominent. These symptoms have continued to occur in spite of adequate control of the electrolyte and water metabolism and of the blood pressure with desoxycorticosterone or beef adrenal cortex extract.

DISCUSSION

DR. DWIGHT J. INGLE, Kalamazoo, Mich.: The concentrate of hog adrenal extract is on clinical trial to test its usefulness in controlling carbohydrate metabolism and in maintaining resistance of patients who cannot be satisfactorily maintained on other forms of therapy. It is gratifying to hear of the encouraging results obtained by Dr. MacBryde and his associates.

DR. SAMUEL SOSKIN, Chicago: I agree with Drs. MacBryde and de la Balze as to the metabolic effects of adrenal cortex extracts; particularly as regards the statement that their action is exerted primarily by stimulating gluconeogenesis in the liver and not by depressing the assimilation of dextrose by the muscles. In this the cortical extracts resemble those of the anterior pituitary.

DR. MACBRYDE: When large amounts of adrenal cortex extract are given experimentally there is no doubt that excessively rapid gluconeogenesis can be produced and that a state resembling diabetes results. Under such conditions the utilization of carbohydrate is certainly hampered and not facilitated.

Plasma Protein Studies in Addison's Disease: Tiselius Electrophoresis Method

DR. E. PERRY McCULLAGH and LENA A. LEWIS, PH.D., Cleveland: Studies were made in the electrophoresis apparatus using phosphate buffer solution pH 7.8 according to the method of Longworth. When the patient had symptoms of definite adrenal insufficiency there was an increased total plasma protein. The albumin, both in terms of percentage and in actual grams per hundred cubic centimeters, was decreased and the total globulin increased. The greatest increase was observed in the beta and gamma globulin, although all the globulin fractions were in the normal range or above. When the patient was well maintained, whether on desoxycorticosterone acetate pellets or desoxycorticosterone acetate pellets and adrenal extract (about 7 cc. of commercial adrenal extract per day) the plasma protein picture failed to become entirely normal. The total protein was in the normal range, but the albumin remained low.

It appeared that, with the dosages of adrenal extract and desoxycorticosterone acetate employed, some essential factor for the maintenance of a normal plasma protein picture was lacking or at least inadequate.

DISCUSSION

DR. C. J. WATSON, Minneapolis: Has the cholesterol flocculation test been tried?

DR. E. PERRY McCULLAGH, Cleveland: The cholesterol flocculation test has not been tried.

DR. WATSON: Is the test the same whether it is due to removal or to tuberculosis?

DR. McCULLAGH: Yes, the same. In 1 case which showed active tuberculosis the α globulin was higher than in the other cases.

Alloxan Diabetes in Dogs

DRS. MARTIN G. GOLDNER and GEORGE GOMORI, Chicago: A single intravenous injection of 50 mg. per kilogram of alloxan given to dogs causes sustained diabetes mellitus. A larger dose (100 mg. per kilogram or more) in a single injection may be fatal within a few hours or may cause a hyperglycemic-uremic syndrome (75 to 100 mg. per kilogram), to which the dogs succumb within four to seven days. A smaller dose (25 mg. per kilogram) does not produce clinical symptoms in dogs.

Alloxan diabetes in dogs is characterized clinically by polydipsia, polyuria and weight loss, by hyperglycemia and glycosuria and by hyperlipemia, which usually develops during the second or third week. The dextrose tolerance test shows a typical diabetic curve. Alloxan diabetes in dogs is insulin sensitive and can be treated with insulin. Insulin, however, does not prevent the development of diabetes if given together with alloxan. Histologically, the beta cells of the islets of Langerhans are degranulated and may disappear completely, the alpha cells appear normal, the small pancreatic ducts show vacuolization, the kidneys show glycogen deposition, and fatty degeneration of the liver is found in later stages. Bioassay for insulin in the pancreases of 2 alloxan diabetic dogs showed very low values. There seems to be no tendency to spontaneous recovery. Some dogs have survived for more than two months and have remained diabetic.

Alloxan has been proved to act on the pancreatic islet cells. It may, however, also have a primary effect on the liver. In larger doses it affects also the kidney parenchyma.

Stimulatory Effect of Diabetogenic Anterior Pituitary Extract on Pancreatic Islet Function in Human Organic Hyperinsulinism

DR. JEROME W. CONN and LAWRENCE LOUIS, Sc.D., Ann Arbor, Mich.: Two patients suffering from spontaneous hypoglycemia due to organic hyperinsulinism (pancreatic insuloma) were studied. After a control period on constant diet high in carbohydrate, 5 to 10 cc. of a clear extract of beef anterior pituitary gland (sterilized at 0 C. by Berkefeld filtration) was given daily subcutaneously. Daily fasting blood sugar levels, nitrogen balance and serial dextrose tolerance tests were obtained.

During three courses of injections (eight, thirteen and twenty-three days) in the 2 patients an evident fall of the fasting blood sugar level occurred. On cessation of injections the level rose to or above the control level. During the injection periods the average level of the fasting blood sugar was depressed 48, 38 and 36 per cent respectively below the control levels. The absolute fall of the average blood sugar was 20 mg. per hundred cubic centimeters in all 3 cases (42 to 22, 50 to 31 and 59 to 39).

In the 1 case in which three successive courses of injections were given the third course failed to depress the fasting level of blood sugar, which at that time began to rise slowly above the control level. This patient was operated on after his third course of injections. An encapsulated insuloma was removed, with complete relief of the hypoglycemic state. Biopsy of normal pancreas was also obtained. Microscopically the tumor had some characteristics of carcinoma. Special islet cell staining techniques are being applied to the normal and abnormal pancreatic tissue. The second patient refused operation.

It appears that, with the amounts of diabetogenic material used, an initial stimulatory effect on pancreatic islet tissue function was obtained in 2 cases of organic hyperinsulinism. Hyperglycemia played no role in the stimulatory effect, since it was consistently absent.

DISCUSSION

DR. HENRY T. RICKETTS, Chicago: Why did not Drs. Conn and Louis continue the injections for a longer time and support the patient with dextrose with the idea of producing exhaustion of the islets, which they say can be done with this extract in dogs?

DR. CONN: It is conceivable that continuation with this type of treatment for a much longer time and with larger doses could lead to eventual "overwork degeneration" of the large amount of functioning islet tissue. If the stimulus was sufficiently great to overcome the ability of the islet tissue to respond, degeneration would result. The effect of so-called diabetogenic anterior pituitary extract appears to be directly on and stimulatory to the islets of Langerhans.

Effect of Phosphorus Feeding on the Phosphorus Metabolism in Hyperthyroidism

DR. I. DARIN PUPPEL, DR. HAROLD T. GROSS, ESTHER HIERDLE, M.S., and DR. GEORGE M. CURTIS, Columbus, Ohio: We have investigated 4 normal persons over a total period of forty-eight days of low phosphorus feeding. They all remained in slight negative phosphorus balance. Five hyperthyroid patients similarly studied over a period of thirty-three days showed an increase in the loss of phosphorus over the intake. This was eight or nine times the normal loss, owing to an increase in the excretion of phosphorus both through the gastrointestinal and through the urinary system. The blood phosphorus in many serial studies almost always remained within normal limits. The disturbances in the phosphorus metabolism were similar to those of the calcium metabolism and thus different from those of hyperparathyroidism. In diffuse toxic goiter the average loss of phosphorus was twice as great as in toxic nodular goiter. This difference remained true even in comparing the phosphorus balance of a toxic nodular goiter patient with that of one with diffuse toxic goiter whose basal metabolic rate was at almost the same level.

For several years we have given a high calcium, phosphorus and vitamin D diet preoperatively to patients with hyperthyroidism. Not one has subsequently developed so-called thyroid crisis. No deleterious effects have been noted. Certain patients with impending thyroid crisis subsequent to the prolonged administration of iodine were treated successfully and more quickly prepared for surgery by use of extra amounts of calcium, phosphorus and vitamin D without employment of an iodine vacation.

Because of the clinical significance of these observations, we determined the effects on the phosphorus metabolism of feeding various compounds and combinations of calcium, phosphorus and vitamin D, including a high phosphorus diet, calcium gluconate, calcium lactate plus drisdol and dicalcium phosphate with viosterol by mouth, as well as calcium chloride by vein. In 5 patients with hyperthyroidism studied over a period of sixty-six days these extra amounts of phosphorus abruptly stopped the negative phosphorus balance. In most instances an immediate great retention occurred with development of a manifest positive balance. We have supplemented the high phosphorus diet with four of the most common types of calcium salts in therapy. They were all effective in maintaining retention of phosphorus. However, in this series wafers of dicalcium phosphate with viosterol were instrumental in producing the most conspicuous retention.

DISCUSSION

DR. E. L. SEVRINGHAUS, Madison, Wis.: Phosphorus and nitrogen will be deposited in these cases. To set up the procedure to get a high phosphorus diet there will usually be a high nitrogen diet. I wonder if Dr. Puppel has any data to show there is a high phosphorus retention without a high nitrogen. If so, the criticism that it is due to improved protein retention would not be necessary.

DR. PUPPEL: We took into consideration the nitrogen balance because it has been shown that this usually remains negative in the hyperthyroid patient unless excess protein is given to maintain a positive balance. We did not do nitrogen balance studies. It has been shown previously that the nitrogen balance usually remains positive if the patient is maintained with a daily intake of at least 1 Gm. of protein per kilogram of body weight and if the patient does not lose weight. We applied the latter clinical facts; that is, these patients were maintained at a constant weight throughout the low and high phosphorus feeding; the protein content of both the high and the low phosphorus diets was kept constant at 1.5 to 2 Gm. daily per kilogram of body weight. The caloric intake was kept at a high level of basal plus 10 to 20 per cent. The fat intake was kept low.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

26:721-872 (Dec.) 1943

- Pathogenesis of Signs of Traube and Duroziez in Aortic Insufficiency: Graphic Study. A. A. Luisada—p. 721
- Frequent Obstructive Anomaly of Mouth of Left Common Iliac Vein. W. E. Ehrlich and E. B. Kraumbhaar—p. 737
- Disseminated Arterial Intimal Proliferation, with Thrombosis. Report of Case. K. C. Kehl and G. Ritchie—p. 751
- *Electrocardiographic Observations on 500 Unselected Young Adults at Work. P. C. Viscidi and A. J. Geiger—p. 763
- Certain Applications of Modern Electrocardiographic Theory to Interpretation of Electrocardiograms Which Indicate Myocardial Disease. R. H. Bayley—p. 769
- Coarctation of Thoracic Aorta with an Aneurysm Distal to Obstruction: Report of Case. J. Zaslow and S. O. Krasnoff—p. 832
- Chronic Occlusive Arterial Disease (Arteriosclerosis Obliterans) Associated with Retinitis Pigmentosa. Case Report. J. L. Eisaman—p. 836.

Electrocardiographic Observations in Young Adults.—Viscidi and Geiger made electrocardiographic studies on 500 apparently healthy working adults between the ages of 18 and 38 years. There was an equal number of males and females. The studies disclosed that half of the records fell outside the range of normal on the basis of authoritative electrocardiographic criteria of normality in current general use. The implication is that electrocardiographic surveys will be misleading unless criteria of what is normal are revised and broadened.

American J. Obstetrics and Gynecology, St. Louis

46:773-928 (Dec.) 1943

- Development of Periurethral Glands in Human Female. J. W. Huffman—p. 773.
- *Further Experience in Management and Treatment of Carcinoma of Fundus of Uterus, with Five Year End Results in 75 Patients. L. C. Scheffey, W. J. Thudium and D. M. Farrell—p. 786
- Intravenous Pyelograms in Normal and Abnormal Pregnancies. Deborah C. Leary and J. P. Peters—p. 803
- Mesonephroma of Ovary. R. J. Jensik and F. H. Falls—p. 810
- *Psychosomatic Treatment of Functional Dysmenorrhea by Hypnosis. Preliminary Report. W. S. Kroger and S. C. Freed—p. 817
- Oral Hormonal Treatment of Functional Amenorrhea. B. L. Cimberg—p. 823
- *Studies on Rh Factor. H. A. Schwartz and P. Levine—p. 827
- Spinal Anesthesia for Cesarean Section. F. Weintraub and M. S. Merriam—p. 836
- Evaluation of Transverse Cervical Cesarean Section. Report Based on Study of 208 Cases. G. W. Gustafson—p. 841
- *Androgen Therapy in Pelvic Malignancy. C. T. Beecham—p. 849
- Absorption of Radioactive Sodium Instilled into Vagina. W. T. Pommerenke and P. F. Hahn—p. 853
- Conjugated Estrogens in Human Pregnancy Serum. A. E. Rakoff, K. E. Paschalis and A. Cantarow—p. 856
- Effect of Medical Diathermy on Menstrual Cycle of Monkey (Macacus Rhesus). H. A. Strauss, L. Tishei and B. B. Rubenstein—p. 861
- *Vagitus Uterinus. G. H. Ryder—p. 867
- Effect on Spermatogenesis of Tissue Fluids Encountered in Female Reproductive Tract. R. L. Brown—p. 873
- Incarceration and Strangulation of Cervix by Ring Pessary. J. L. McGoldrick and W. A. Lapp—p. 877
- Occurrence of Anencephalic Monsters in Successive Pregnancies. J. K. Quigley—p. 879

Five Year Results in Treatment of Carcinoma of Uterine Fundus.—A consecutive series of 127 cases of carcinoma of the uterine fundus were analyzed by Scheffey and his co-workers. In 75 of these the five year end results could be surveyed. Four out of 5 women had passed their menopause. The average age of this group was 58.9 years, and the diagnosis was suspected correctly in 90 per cent because of the postmenopausal bleeding. In the premenopausal group the average age was 46.3 years. In 10 per cent carcinoma was not suspected.

It is among these younger women who have not ceased menstruating that irregular bleeding is too often regarded as benign in origin, and ill advised or inadequate treatment results. Abnormal uterine bleeding was the most significant and reliable symptom in 96 per cent of the entire series. The value of diagnostic curettage is apparent. Fibromyomas were noted in approximately 38 per cent of all patients treated surgically, and palpation suggested their presence in a number of irradiated patients. Previous pelvic operative procedures had occurred in nearly 30 per cent of all the patients. Carcinoma was thought to be limited to the uterus in 74 per cent of the patients when they were first seen, irrespective of the size of the uterus. Low grade lesions respond equally well to irradiation and to surgery, but it would seem that the survival rate in intermediate and high grade lesions is materially improved when irradiation has been a factor in the treatment, either singly or in combination with surgery. Prognosis based on the grade of malignancy alone is uncertain. The five year survival rate was 18.1 per cent with surgery alone, 40.5 per cent with irradiation alone and 38.4 per cent (corrected for uteri actually removed, 42.9 per cent) with surgery and irradiation. The authors are convinced that preliminary irradiation with radium, followed by complete operation eight to ten weeks later, is the treatment of choice for carcinoma of the fundus.

Treatment of Dysmenorrhea by Hypnosis.—Kroger and Freed applied the following procedure to 4 patients. Hypnosis was induced after rapport was established with the patient. This was characterized by a state of generalized hypersuggestibility. Suggestions were made in this state that the next menses might be free from pain or without excessive discomfort. Also suggestions were made that the next menses would be normal in all respects. Posthypnotic suggestions last about a month, and when repeated the desired effect may become permanent. All 4 patients were permanently cured. Only one treatment was necessary to bring about a permanent relief in 2 cases. Three to twelve treatments were necessary for the other 2 cases. Some cases of functional dysmenorrhea present a psychosomatic pattern which may be responsible for a lowered pain threshold. Because psychogenic factors contribute to the dysmenorrhea, they must be determined by an exhaustive study of the personality. The authors have utilized age regression with hypnoanalysis in 5 cases. The patient is regressed to a preadolescent age or reverted to the age prior to the onset of dysmenorrhea. The patient is then slowly reoriented to the present chronological age. The development of emotional conflicts, personality changes, inhibitions or harmful habit patterns can be discovered. Appropriate suggestions are then made toward their removal. After the patient's consciousness is reeducated by intensive psychotherapy under hypnosis, a cure may be effected readily. Hypnosis when used in these cases is only the means toward treatment, not the cure itself. It speeds up the analytic process. Of 9 patients treated, 7 were completely relieved of their menstrual discomfort following the use of hypnosis either by itself or with hypnoanalysis and age regression. One was partially relieved and the 1 failure was due to factors beyond the authors' control.

Studies on the Rh Factor.—Beginning in February 1941 and continuing for a period of sixteen months, Schwartz and Levine studied the bloods of selected patients to determine whether they were Rh+ or Rh−. Potent anti Rh agglutinins derived from mothers of erythroblastic infants now had become available. All serums were also tested for the presence of anti Rh or other atypical agglutinins. An attempt was made to examine the blood of each mother who had an unexplained stillbirth or neonatal death and of some mothers with various complications of pregnancy. The authors conclude that in most instances erythroblastosis fetalis is produced as a result of immunization of the Rh− mother by Rh+ fetal erythrocytes. The action of maternal anti Rh agglutinins on the susceptible fetal red cells is the source of the hemolysis in the fetus during intrauterine life. Among 162 consecutive stillbirths and neonatal deaths the incidence of erythroblastosis fetalis is somewhere between 4.4 and 8.2 per cent. Rh studies indicate that the incidence of erythroblastosis fetalis in this series is 100 per cent that heretofore given on the basis of clinical and postmortem diagnosis. In cases of intrauterine death occurring with in

advance of labor, as evidenced by fetal maceration, the incidence of erythroblastosis is somewhere between 16.6 and 29.1 per cent. Studies of a relatively small series of cases indicate that the Rh factor is important in the production of late but not of early abortions and that it is unimportant in the etiology of hemolytic jaundice, sicklelema, hydatidiform mole and ectopic pregnancies. While infants with erythroblastosis fetalis are often premature at birth, most causes of prematurity appear unrelated to the Rh factor. Proof for the possible relationship of blood incompatibility of the mother and her fetus to eclampsia and specific toxemia is still to be provided.

Androgen Therapy in Pelvic Cancer.—Beecham submitted a small group of patients with ovarian carcinoma (also two with carcinoma of the cervix) to androgen therapy. These cases were hopeless and it was felt that no harm could result from endocrine therapy. Although the final results in these cases were identical to similar cases in which androgenic therapy was not employed, the author is of the opinion that this method is definitely worth while. The pain experienced by the majority of these patients was almost completely relieved, and they were much improved as evidenced by their gain in weight. Such results cannot be expected from opiates and high voltage roentgen therapy. None of the cases demonstrated evidence of reduction in size of the neoplasm, nor were histologic changes found. The author thinks that androgenic therapy should be further tried in cases of this type.

Vagitus Uterinus.—A woman aged 35 had had previous deliveries. One was a breech delivery which resulted in a permanently atrophied arm and the second a high forceps delivery which resulted in a stillbirth. Ryder reports that she had been promised that the third delivery, unless it could be normal, should be by cesarean section. For this delivery she came to the hospital in active labor. The baby was small, with the head high at the pelvic brim in occiput posterior position. Labor progressed rapidly. It seemed as though delivery would be normal and quick, but the head did not descend. The cervix was found fully dilated with the head well engaged. Forceps were applied, but moderate tractions caused no advance. The forceps were removed and preparations for a cesarean section were made. With a stethoscope on the patient's abdomen the fetus could be heard crying loudly. When the crying stopped, the fetus could be heard breathing with gurgling respiration as though choking with fluid. It seemed probable that the fetus could inspire too much liquor amnii and it was considered wise to wait for the section. Breech extraction was performed and resulted in the birth of an undamaged baby which was soon revived and crying lustily. Reference to 131 cases of vagitus uterinus were found in the literature of various countries from 1546 to 1941.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

50:719-852 (Dec.) 1943

- Annular Shadows of Unusual Type Associated with Acute Pulmonary Infection. L. R. Sante and C. E. Hufford.—p. 719.
 *Roentgenographic Aspects of Monaldi's Cavity Aspiration in Pulmonary Tuberculosis. W. R. Oechsli and E. Kupka.—p. 733.
 Small Intestinal Enema. R. Schatzki.—p. 743.
 Ulcer in Descending Duodenum. C. N. Borman.—p. 752.
 Gaucher's Disease. S. Levine and L. Solis-Cohen.—p. 765.
 Ruptured Ligaments of Ankle: Roentgen Sign. R. P. Ball and E. W. Eghert.—p. 770.
 Abnormal Pulmonary Physiology as Result of Chronic Irradiation Pleuropulmonitis: Preliminary Report. J. E. Leach.—p. 772.
 Use of Roentgen Ray in Scientific Examination of Paintings. W. J. Ellicott.—p. 779.
 Treatment of Asthma with Roentgen Ray. I. I. Kaplan and S. Rubinfeld.—p. 791.
 Spontaneous Rib Fractures Following Irradiation for Cancer of Breast. A. B. Friedmann.—p. 797.
 Specific Action of Polonium on Lymphatic System as Shown in Adrenalectomized Animals. C. P. Leblond and A. Lacassagne.—p. 801.
 Measurements on Roentgen Ray Production and Absorption in Range 0.7 to 2.5 Megavolts. L. C. Van Atta, A. A. Petrauskas and F. E. Myers.—p. 803.

Roentgenographic Aspects of Pulmonary Cavity Aspiration.—Oechsli and Kupka describe the roentgenologic aspects in 17 cases of pulmonary tuberculosis in which Monaldi's method of aspiration was used. All but two cavities were of the balloon type, and the most prompt results were obtained in these cases. The results in two type 3 cavities with probably

caseous walls were slow and poor. Behavior of the cavity wall in some patients appears to substantiate Monaldi's contention that the cavity wall in many instances is partially made up of compressed, airless alveoli, rather than pathologic material. An increase in dense shadowing over the part of the lung containing the cavity, noted by others using this method, appears to be due in part to localized pleural changes which may be associated with the high negative pressure produced in the cavity by this treatment. The state of the tract occupied by the catheter is best determined by body section roentgenography. This method of examination is also a prime requisite to determination of cavity closure.

Annals of Internal Medicine, Lancaster, Pa.

19:829-1076 (Dec.) 1943

- *Thiocyanate Goiter in Man. R. W. Rawson, S. Hertz and J. H. Means.—p. 829.
 Acute Lupus Erythematosus Disseminatus. H. E. Cluxton Jr. and L. A. M. Krause.—p. 843.
 Relation of Emotions to Injury and Disease: Call for Forensic Psychosomatic Medicine. H. W. Smith and S. Cobb.—p. 873.
 Intracranial Aneurysms—Report of 36 Cases. N. Mitchell and A. Angrist.—p. 909.
 Diagnostic QRS Patterns in Myocardial Infarction. M. M. Hurwitz, R. Langendorf and L. N. Katz.—p. 924.
 Myoepithelial Hamartoma of Gastrointestinal Tract (Clarke). N. Mitchell and A. Angrist.—p. 952.
 Cultivation of Physiologic Relaxation. E. Jacobson.—p. 965.
 Perforation of Interventricular Septum Following Infarction; Intravital Diagnosis: Report of Case and Survey of Literature. M. L. Weber.—p. 973.
 *Amyloidosis Complicating Tuberculosis—Diagnosis, Prognosis and Treatment. S. Cohen.—p. 990.

Thiocyanate Goiter in Man.—Rawson and his associates direct attention to the goitrogenic effect of cabbage and other brassica plants and to the fact that the sulfonamides and thiourea-like compounds act as goitrogens. With the advocated use of soy beans in the modern diet, the liberal prescribing of the sulfonamides in clinical medicine and with widespread use of thiocyanate in treating hypertension, it becomes of practical importance to know whether such agents have any goitrogenic action in man. The authors report the development of goiter in 2 patients who received potassium thiocyanate for hypertension. A similar case was seen in consultation, and several were cited from the literature. Thiocyanate goiter is characterized by (a) hyperplasia of the thyroid, (b) symptoms of hypothyroidism, (c) exophthalmos (seen in 1 case), (d) low basal metabolic rate, (e) low blood iodine, (f) decreased urinary excretion of labeled iodine and (g) increased urinary excretion of thyrotropic hormone in the inactivated form. The theory is advanced that this drug blocks the formation of thyroid hormone by the thyroid and that the consequent lowering of concentration of active thyroid hormone in the blood stream causes stimulation of the anterior pituitary to produce an excess of thyrotropic hormone. This in turn causes thyroid hyperplasia but, because of the block, no increase in physiologically active thyroid hormone output. It is a hyperplasia of frustration. An excess of administered iodine may force the block and cause liberation of active hormone. Administration of thyroid bypasses the block and relieves the situation by substitution. Thiocyanate goiter can probably be prevented by prophylactic doses of iodine. Thiocyanate goiter can be relieved by the administration of thyroid even when thiocyanate administration for hypertension is continued.

Amyloidosis Complicating Tuberculosis.—Amyloidosis is a common complication of tuberculosis. Postmortem examinations of 143 patients with tuberculosis revealed amyloidosis in 53, or 39 per cent. This report is based on the 53 cases and on 26 patients with clinical evidence of amyloidosis and 100 per cent absorption of congo red in the Bennhold test. One hundred per cent absorption of the dye by the tissues within one hour is indicative of amyloidosis. A negative congo red test does not exclude amyloid disease. Albuminuria and casts antedated 100 per cent congo red retention in about one third of a group of 37 cases. Urine analyses in 143 tuberculous cases revealed that about 75 per cent of those who spilled albumin plus casts had amyloidosis. This is emphasized as a diagnostic criterion. Charts are presented in an attempt to visualize the prognosis of 58 tuberculous patients with amyloidosis, using the urinary aspects as connoting the probable onset of amyloidosis.

Almost 90 per cent were dead within two years after the development of amyloidosis. The nature of the underlying tuberculous lesion greatly influences the span of life in the amyloid phase. The oral therapy was a high protein diet, iron and diluted hydrochloric acid. Twenty-three also received parenteral therapy, which was chiefly liver extract. Objective improvement in the amyloid status was found in 4 patients who had arrested tuberculous disease. Adequate control of tuberculosis was probably the chief factor in the improvement. There was no evidence of anatomic regression of amyloidosis in 5 cases that came to necropsy.

Archives of Pathology, Chicago

37:1-82 (Jan.) 1944

- *Rheumatic Pneumonia. K. T. Neuburger, E. F. Geever and E. K. Rutledge.—p. 1.
Cholesterol Lysis in Atheroma. T. Leary.—p. 16.
Eosinophilia of Spleen Associated with Sudden Death. A. C. Allen.—p. 20.
Cancerous Mixed Tumor of Urinary Bladder. E. F. Hirsch and G. W. Gasser.—p. 24.
Development of Cardiac Lesions in Thiamine-Deficient Rats. L. L. Ashburn and J. V. Lowry.—p. 27.
Relation of Postmortem Interval to Synthesis of Glycogen from Dextrose by Surviving Liver. J. A. Saxton Jr. and Mary L. Miller.—p. 34.
Effect of Estrogens on Testis in Hepatic Insufficiency. T. G. Morriene.—p. 39.
Similarity of Acid-Fast Pigment Ceroid and Oxidized Unsaturated Fat. K. M. Endicott.—p. 49.
Unusual Cardiac Lesions Associated with Chronic Multiple Rheumatoid Arthritis. A. H. Baggenstoss and E. F. Rosenberg.—p. 54.
Genesis of Multinucleated Giant Cells in Lymphatic Tissue of Appendix in Measles. R. M. Mulligan.—p. 61.

Rheumatic Pneumonia.—Neuburger and his co-workers made pathologic studies on 63 consecutive cases of active and quiescent rheumatic fever in Denver. There were 8 cases of pulmonary inflammation which showed peculiar granulomas in the alveolar ducts and alveoli, focal alveolitis with necrosis, fibrinous exudation and hyaline lining membranes, arteriolitis, mononuclear cell exudation and septal cell proliferation. The term "Masson body" is suggested for the rheumatic pulmonary granuloma, which is considered to be an equivalent of the Aschoff body in the heart. Canadian authors expressed the opinion that the rheumatic involvement of the lungs they observed was related possibly to environmental conditions peculiar to Montreal. The studies of Neuburger and his co-workers indicate that the same type of rheumatic pulmonary change occurs elsewhere. It is of interest in this regard that Colorado has a high incidence of rheumatic fever. This is contradictory to the opinion that high altitude and dry, sunny climate, which prevail in Colorado, protect against rheumatic infection.

Bulletin of Johns Hopkins Hospital, Baltimore

73:401-496 (Dec.) 1943

- Mucormycosis of Central Nervous System: Report of 3 Cases. J. E. Gregory, A. Golden and W. Haymaker.—p. 405.
Distribution of Certain Oxidative Enzymes in Ciliary Body. J. S. Friedenwald, H. Herrmann and R. Moses.—p. 421.
*Salicylate Therapy in Rheumatic Fever: Rational Technic. A. F. Coburn.—p. 435.
*Anaphylactic Nature of Rheumatic Pneumonitis. A. R. Rich and J. E. Gregory.—p. 465.
Sodium Propionate in Treatment of Superficial Fungous Infections. E. L. Keeney and E. N. Broyles.—p. 479.

Salicylate Therapy in Rheumatic Fever.—Coburn attempted to determine whether or not salicylate modifies the inflammatory reaction which characterizes activity of the rheumatic process, to identify the active salicylate fraction and to develop a rational technic for the treatment of the rheumatic attack. He describes a simple method for the determination of the salicyl radical in oxalated blood and presents data on plasma salicylate levels in relation to dosage of sodium salicylate in rheumatic fever. Observations on the relation of rheumatic activity to the plasma salicylate level show that 20 patients maintained at 359 to 400 micrograms per cubic centimeter manifested a prompt and progressive subsidence of rheumatic inflammation and that 20 other patients with plasma levels below 250 micrograms per cubic centimeter continued to manifest an active inflammatory process. The intravenous administration of sodium salicylate is required to obtain a rapid rise in the

plasma concentration of salicylate to 400 micrograms per cubic centimeter or higher. A therapeutic technic for the use first of intravenous and later of oral salicylate is suggested for the rapid development and maintenance of plasma salicylate levels above 350 micrograms. The results of two years' experience with this technic show that none of 38 rheumatic patients treated with 10 Gm. of sodium salicylate daily developed valvular heart disease and that 21 out of 63 similar patients who received only small doses of sodium salicylate developed physical signs of heart disease. The observations suggest that a plasma salicylate level of at least 350 micrograms per cubic centimeter may be required to suppress the rheumatic reaction and that plasma levels below 200 micrograms per cubic centimeter may be sufficient to relieve symptoms while masking a progressive inflammatory process.

Anaphylactic Nature of Rheumatic Pneumonitis.—Rich and Gregory demonstrated that cardiac and arterial lesions having the basic characteristics of those of acute rheumatic fever can be produced experimentally as a result of anaphylactic hypersensitivity. The comparison of the peculiar lesion of rheumatic pneumonitis with that of the pneumonitis caused by sulfonamide hypersensitivity shows that the two are basically identical, and that both exhibit the primary capillary damage characteristic of focal anaphylactic reactions. This provides additional evidence in support of the view that the lesions of acute rheumatic fever may be anaphylactic in origin.

California and Western Medicine, San Francisco

59:301-352 (Dec.) 1943

- Medical Practice of the Future: As a Medical Administrator Views It. A. J. J. Rourke.—p. 308.
Medical Practice: Its Evolution. M. Fishbein.—p. 316.
Observations of a Medical Officer in South Pacific Area. F. G. Crandall Jr.—p. 319.

Connecticut State Medical Journal, Hartford

8:3-68 (Jan.) 1944

- Medicine in Wartime Industries. G. H. Gehrman.—p. 3.
Tuberculosis as an Economic and Social Problem. R. E. Plunkett.—p. 9.
Demerol: New Synthetic Analgesic: Its Indications as Substitute for Morphine. R. C. Batterman.—p. 13.
Wagner Bill. M. M. Davis.—p. 18.
My Reasons for Favoring Wagner-Murray-Dingell Bill. R. J. Watt.—p. 20.
... To Be Included. K. Roberts.—p. 23.
New York Physician Speaks. L. D. Redway.—p. 25

Endocrinology, Springfield, Ill.

33:333-416 (Dec.) 1943

- Inactivation of Stilbestrol by Liver in Vitro. B. Zondek, F. Sulman and J. Sklow.—p. 333.
Hormone Factors in Male Behavior of Female Rat. R. Koster.—p. 337.
Decreased Phosphorus Appetite of Parathyroidectomized Rats. C. P. Richter and Sylvia Helfrick.—p. 349.
Reproductive Capacity in Adult Male Rats Treated Prepuberally with Androgenic Hormone. J. G. Wilson and Harriet C. Wilson.—p. 353.
Resistance of Rats to Potassium Poisoning After Administration of Thyroid or of Desoxycorticosterone Acetate. B. E. Lowenstein and R. L. Zwemer.—p. 361.
Effects of Low Atmospheric Pressures on Activity of Thyroid, Reproductive System and Anterior Lobe of Pituitary in Rat. A. S. Gordon, F. J. Tornetta, S. A. D'Angelo and H. A. Charipper.—p. 366.
Observations on Fluorescence, Birefringence and Histochemistry of Rat Ovary During Reproductive Cycle. E. W. Dempsey and D. L. Bassett.—p. 384.

Journal Industrial Hygiene and Toxicology, Baltimore

25:423-460 (Dec.) 1943

- Intracellular Penetration of Bromide as Feature in Toxicity of Alkyl Bromides. D. P. Miller and H. W. Haggard.—p. 423.
*Effect of Wet Garments on Body Weight Loss at High Environmental Temperatures. N. Lifson and M. B. Visscher.—p. 434.
Analysis of Atmospheric Contaminants Containing Nitrate Groups. H. Yagoda and F. H. Goldman.—p. 440.
Lead Exposures at Government Printing Office. A. D. Brandt and G. S. Reichenbach.—p. 445.
Brucellosis in Packing House Workers. M. G. Levine.—p. 451.

Wet Garments at High Environmental Temperatures.—According to Lifson and Visscher the practice of wearing clothing wet with water by workmen in especially hot situations, such as furnace rooms and foundries, is one which has been

Journal of Urology, Baltimore

50:641-794 (Dec.) 1943

- Renal Lesions Within the Draft Age. C. L. Deming.—p. 641.
Hypertension of Renal Origin as Observed at Operation on Single Kidney. H. G. Bugbee.—p. 647.
Occurrence of Endometrial Tissue in Kidney: Case Report and Discussion. V. F. Marshall.—p. 652.
Transplantation of Ureters into Rectosigmoid in Infants: Review of 19 Cases. C. C. Higgins.—p. 657.
Looped Catheter in Treatment of Ureteral Calculi. V. A. Balkus.—p. 667.
Natural Color Intravesical Photography. L. E. McClea.—p. 673.
Benign Hypertrophy of Prostate: Morphologic Study. R. A. Moore.—p. 680.
*Clinical and Pathologic Effects of Diethylstilbestrol and Diethylstilbestrol Dipropionate on Carcinoma of Prostate Gland: Continuing Study. P. J. Kahle, J. R. Schenken and E. L. Burns.—p. 711.
Malignancy of Epididymis, with Report of Case of Teratoma of Epididymis. E. G. Crabtree.—p. 733.
Stenosis of External Urethral Meatus. M. F. Campbell.—p. 740.
Complete Urethral Occlusion in Living Newborn: Report of 5 Cases. R. L. Dourmashkin.—p. 747.
*Adrenal Heterotopia, Rests, and the So Called Grawitz Tumor. C. R. O'Crowley and H. S. Martland.—p. 756.
Twelve Year Survival with One Half of One Kidney. G. F. McKim, P. G. Smith and T. W. Rush.—p. 769.
Stone in Lower Third of Ureter, with Report of an Instance of an Incarcerated Basket. W. N. Wishard Jr.—p. 775.
Incarcerated Inguinal Hernia Containing Cancer of Bladder. G. D. Oppenheimer.—p. 784.
Spermia Transport in Man. R. L. Brown.—p. 786.

Diethylstilbestrol and Diethylstilbestrol Dipropionate in Prostatic Carcinoma.—Kahle and his associates report 7 cases of adenocarcinoma of the prostate, 6 proved by biopsy, which have been treated with diethylstilbestrol or diethylstilbestrol dipropionate since March 1940. These cases were reported in detail in February 1942, and 5 cases which could be followed are brought up to date in this communication. In 4 cases the improvement previously reported in the general health, relief of symptoms and local findings has continued to date. The fifth patient died of urinary sepsis and cardiac failure. In all 5 cases, including the fatal case, serial microscopic examination showed regression in the carcinomatous tissues. There was a regression of metastatic osseous lesions as demonstrated by serial roentgenologic examination in the single case in which such lesions were present and a regression of metastases to the lymph nodes in another instance. Massive doses of diethylstilbestrol and diethylstilbestrol dipropionate were used without ill effects except for transient gynecomastia in a single instance. In 1 patient who presented an apparent recurrence of the carcinomatous process a second course of treatment was as effective as the first in controlling symptoms and causing a regression of the neoplasm. The changes observed in stilbestrol treated carcinomas of the prostate, as compared to untreated carcinoma, are as follows: 1. In the untreated specimen the neoplastic cells present large vesicular nuclei, prominent nucleoli and granular, reticular cytoplasm. 2. In the first stage of regression there is a decrease in the size of the nuclei associated with condensation of the nuclear chromatin. Nucleoli are no longer visible, and mitoses are absent. Cytoplasmic vacuoles appear and are located predominantly at the bases of the cells. 3. In the second stage of regression the nuclei are pyknotic. The cytoplasm is practically clear and the cell membranes have ruptured, with resulting coalescence of vacuoles. With the rupture of all the cell membranes, the pyknotic nuclei and the fragments of the membranes are clustered in the centers of the acinar spaces. 4. In the next stage of regression, clear acinar spaces contain only remnants of pyknotic nuclei. 5. In the final stage only stroma, consisting of smooth muscle and fibrous tissue, remains. Accumulations of lymphocytes and macrophages and deposits of brown pigment are present in some parts of the stroma.

Adrenal Heterotopia, Rests and the So-Called Grawitz Tumor.—O'Crowley and Martland encountered adrenal-renal heterotopia with the adrenal glands (complete heterotopia) or a considerable portion of them (partial heterotopia) beneath the capsule of the kidneys and with no adrenals in their normal position eight times in the routine examination of 5,000 consecutive bodies. The explanation of this anomaly, which in their experience is always bilateral, is unknown. As the renal capsule is said to be completed at a time in early fetal life when the adrenal cortex is far distant, it would seem that a mechanical displacement is impossible. It suggests that either

embryologic data are incomplete, that exceptions occur or that pluripotent cells exist which can form either renal parenchyma or adrenal cortex. Contrary to some authorities, this anomaly seems to have no effect on the life of the individual. It neither shortens life nor predisposes to infections, tuberculosis or debilitating diseases. No endocrine disturbances were observed. The recorded high incidence of status lymphaticus with this anomaly is not borne out in the cases seen by the authors. In adrenal-renal heterotopia the surgeon in performing a nephrectomy would unwittingly remove the adrenal. The authors have never heard, however, that this has been done. Since the heterotopic adrenals are hypoplastic and, in addition, contain no medulla (or scant medulla in extracapsular portions only) such an operation might cause symptoms suggesting adrenal insufficiency. The demonstration that the entire adrenal cortex, or large portions of it, may be found beneath the renal capsule remaining on the kidney after decapsulation, and the finding in some of these cases of many small, isolated bits of cortical tissue near these subcapsular adrenals, but scattered over the surface of the kidney, greatly strengthens the opinion held by many pathologists that the so-called adrenal rests are cortical adrenal tissue which have become misplaced during development. It is reasonable to assume, therefore, that some renal hypernephromas may arise from such misplaced cortical adrenal tissue.

Kentucky Medical Journal, Bowling Green

42:1-30 (Jan.) 1944

- Endometriosis of Sigmoid Causing Intestinal Obstruction: Report of 2 Cases. J. B. Lukins and L. Lukins.—p. 4.
100 Cases of Epidemic Meningitis, Diagnosis and Treatment. K. Glaser.—p. 5.
Current Trends in Military Surgery. F. W. Rankin.—p. 11.
Use of Whole Blood, Blood Plasma, Blood Derivatives and Blood Substitutes. R. R. Kracke and W. R. Platt.—p. 15.
Blood and Lymph. W. E. McWilliams.—p. 23.

New England Journal of Medicine, Boston

229:959-985 (Dec. 23) 1943

- Relation of Physical Therapy to Arthritis. W. B. Snow.—p. 959.
Coexisting Intrauterine and Extrauterine Pregnancies: Review with Report of Case. S. J. King.—p. 965.
*New Method of Giving Potassium Iodide. W. T. Garfield.—p. 971.
Urology. W. C. Quinby.—p. 972.

New Method of Giving Potassium Iodide.—Garfield describes the use of potassium iodide in the form of enteric coated pills. The enteric coating on these tablets does not dissolve until it comes in contact with the bile in the intestinal tract; it is insoluble in alkaline or acid solutions alone. The enteric coated pill was given in 12 cases of syphilis in varying amounts. The 12 patients responded well, and none complained of a gastric upset. Three patients evidenced idiosyncrasies to the drug. In view of the lack of gastric disturbances and the accuracy of dosage, further trial of this method of administering potassium iodide is recommended.

New York State Journal of Medicine, New York

44:1-112 (Jan. 1) 1944

- Treatment of Arterial Embolism of Extremities—A Three-Phase Division. F. S. Wetherell.—p. 35.
Technical Precision in Thyroid Surgery. C. G. Heald.—p. 43.
Subastragaloid Dislocations, with Report of 2 Cases of Dislocation of Subastragaloid Joint and Fracture of Os Calcis, 1 of Which Was Compounded. M. C. O'Shea.—p. 49.
Nutrition of Industrial Worker in United States and Abroad. R. A. Gortner Jr.—p. 56.
Scientific Basis for Recommended Dietary Allowances. Lydia J. Roberts.—p. 59.
Problems in Early Treatment of Polymyositis. J. Wright.—p. 67.
Second Report on Rocky Mountain Spotted Fever in New York State Exclusive of New York City. E. R. Moulard and E. L. Hagen.—p. 73.

Pennsylvania Medical Journal, Harrisburg

47:321-416 (Jan.) 1944

- Continuous Caudal Analgesia: A Step Forward in Control of Pain at Childbirth. R. A. Hinson and W. B. Edwards.—p. 325.
Conservative Plastic Operations on Kidney. L. F. Millien.—p. 341.
Management of Bilateral Ureteral Obstruction. T. R. Fetter.—p. 345.
Diversion of Urinary Stream by Cutaneous Ureterostomy. L. B. Green.—p. 356.
Menopausal Management: Further Report on Diethylstilbestrol. J. A. Hepp.—p. 363.
Use of Histamine in Prophylactic Tetanus Antitoxin Reaction. S. A. Eger and J. E. Stone.—p. 371.

Southern Medical Journal, Birmingham, Ala.

37:1-62 (Jan.) 1944

- *Amputation with Refrigeration Anesthesia. F. M. Massie.—p. 1.
 Care of Battle Casualties and Casual Sick. N. T. Kirk.—p. 6.
 Students' Army Specialized Training Program in Action. E. H. Perry.—p. 8.
 Postgraduate Training in Army Air Forces Hospitals. J. R. McDowell.—p. 10.
 Future of American Medicine. J. E. Paullin.—p. 12.
 Otitis Media Still Takes Its Toll. W. Dean.—p. 17.
 General Aspects of Acute Surgical Infections of Kidney. A. D. Munger.—p. 20.
 Surgical Treatment of Cancer of Body of Uterus in Obese. L. W. Frank.—p. 24.
 Treatment of Morphine Abstinence Syndrome with Synthetic Cannabis-like Compound. C. K. Hummelbach.—p. 26.
 Ten Years of Observing the Underprivileged Child. G. H. Gregory.—p. 29.
 Allergy to Liver Extract. H. T. Engelhardt and V. J. Derves.—p. 31.
 Free Diet in Juvenile Diabetes. J. W. Bruce.—p. 34.
 Lacquer Dermatitis. H. Hailey.—p. 37.

Amputation with Refrigeration Anesthesia.—Massie states that with refrigeration, not freezing, tourniquets may safely be left on for many hours. Anesthesia produced by the combination of tourniquet and low temperature of the ice pack is complete. There is no shock during or following the amputation. Infection is completely controlled in the postamputation stumps by continued cold packs, though there is experimental evidence that the tissues may be more susceptible to infection after the temperature is restored to normal. The experimental and clinical evidence emphasize the menace of applying heat to tissue with a reduced and inelastic blood supply. The author used the refrigeration anesthesia in 14 cases chiefly for amputations for diabetic and peripheral vascular lesions. The mortality for such amputations was formerly as high as 65 per cent. The ice and ligation method reduced this to 15.5 per cent in 45 patients who underwent 62 operations. The mortality for thigh amputations in this series was 13.3 per cent.

Surgery, Gynecology and Obstetrics, Chicago

77:561-678 (Dec.) 1943

- High Altitude Frostbite: Preliminary Report. L. Davis, J. E. Scarff, N. Rogers and M. Dickinson.—p. 561.
 Primary Endometriosis of Cervix Uteri. A. F. Lash and H. Rappaport.—p. 576.
 One Stage Pancreatoduodenectomy. A. Brunschwig.—p. 581.
 Reimplantation of Ureter into Bladder: Report of Method Applied to 10 Patients. A. R. Stevens and V. F. Marshall.—p. 585.
 New Type of Bone Plate and Screws. K. Townsend and C. Gillfillan.—p. 595.
 Treatment of Intertrochanteric Fractures of Femur with Hanging Cast. M. D. Johnson.—p. 598.
 Traumatic Wounds of Abdomen. R. A. Griswold.—p. 601.
 Observations on Transudate in Intestinal Strangulation: I. Effect of Adrenal Cortical Extract on Its Toxicity. H. Laufman and S. C. Freed.—p. 605.
 *Dermatome Pattern Graft and Its Use in Reconstruction of Hands. F. E. Kanthak.—p. 610.
 Esophagobronchial Fistula. L. H. Clerf, E. E. Cooley and J. J. O'Keefe.—p. 615.
 Face and Persistent Brow Presentations. A. C. Posner and I. M. Buch.—p. 618.
 One Aspect of Posttraumatic Syndrome in Craniocerebral Injuries. K. G. McKenzie.—p. 631.
 Value of Stone Dissolving Agent, Solution G, in Treatment of Alkaline Incrustations of Bladder Lesions. C. C. Herger, H. R. Sauer and E. Neter.—p. 634.
 Polypoid Lesions of Colon of Children. R. L. J. Kennedy, C. F. Dixon and H. M. Weber.—p. 639.
 Use of Methedrine in Surgical Operations: Clinical Study on an Effective Pressor Drug. H. Dodd and F. Prescott.—p. 645.
 Relief of Essential Dysmenorrhea with Ethinyl Estradiol. R. A. Lyon.—p. 657.
 Perforation of Gallbladder: Study of 25 Consecutive Cases. L. L. Cowley and H. N. Harkins.—p. 661.
 Volvulus of Sigmoid Colon: Discussion of Combined Volvulus and Hepatodiaphragmatic Interposition. J. G. Probststein and H. R. Senturia.—p. 669.

Treatment of Intertrochanteric Fractures of Femur.

Johnson states that analysis of the causes of death in patients with intertrochanteric fracture of the femur at St. Louis City Hospital revealed that pneumonia accounted for from 39 to 53.4 per cent of the fatalities. Decubitus ulcers have always been a major problem in the care of these patients. To overcome some of these complications, the use of a hanging cast has been tried. In 50 cases treated by this method the mortality rate has been reduced from 39.3 to 18 per cent and the duration

of hospitalization from 84.7 days to 62.3 days. In order to prevent pressure sores and peroneal nerve paralysis with accompanying foot drop a Steinmann pin is inserted through the distal end of the femur and incorporated in the cast. No local infection of soft tissues or bone injury has resulted from the Steinmann pin. The cast is applied with the knee in 30 to 40 degrees of flexion. As soon as the plaster is sufficiently hardened, from 20 to 35 pounds of traction is applied through an overhead pulley at the foot of the bed. The line of traction is similar to that used in a Hodgen splint. The traction is used only while the patient is in bed, the weight of the cast acting as traction while the patient is in a wheel chair or up on crutches. One to three days after the application of the cast, each patient is placed in a wheel chair for two to six hours daily. The casts were removed after an average of 43.4 days. Complications, such as pneumonia, decubitus ulcers, stiffness of knees and ankles and weakness from lying in bed, were less frequent. The reductions have been as good as the reductions obtained by other methods. There were no instances of nonunion.

Dermatome Pattern Graft in Reconstruction of Hands.

—For the reconstruction of injuries to the cutaneous covering of the hands the free skin transplant holds advantages over the prolonged pedicle flap operations. The introduction of the dermatome has resulted in a method of obtaining uniformly large grafts of a predetermined thickness with sharp straight edges, more suitable for smaller reconstructions than the razor graft. Kanthak describes a method of utilizing the dermatome in preparing grafts of a specific pattern for reconstruction of extensive injuries of the hands. This procedure consists in the removal of a split graft with the dermatome, cutting a pattern of the area to be grafted and transferring the pattern to the dermatome drum, where the outline is cut on the drum. The graft is subsequently transferred to the recipient area, where it is sutured and dressed in the customary manner. The method represents a combination of full thickness and split thickness grafting and is especially suitable for large areas of irregular outline. Since the donor site requires no additional surgery for closure as does the full thickness grafting technic, this procedure simplifies the problem of restoring areas of considerable size and complicated design. This method is of value in treating keloidal areas by complete excision and skin grafting.

78:1-112 (Jan.) 1944

- Treatment of War Fractures of Femur. S. S. Yudin.—p. 1.
 Division of Flexor Tendons Within Digital Sheath. S. L. Koch.—p. 9.
 Reestablishment of Esophagogastric Continuity Following Resection of Esophagus for Carcinoma of Middle Third. J. H. Garlock.—p. 23.
 Gangrene Complicating Fractures About Knee. J. M. King and B. J. Brewer.—p. 29.
 Complete Surgical Division of Patent Ductus Arteriosus: Report of 14 Successful Cases. R. E. Gross.—p. 36.
 Importance of Focal Infection in Obstetrics. M. Solis-Cohen.—p. 44.
 *Nutritional Deficiency in Etiology of Menorrhagia, Metrorrhagia, Cystic Mastitis and Premenstrual Tension: II. Further Observations on Treatment with Vitamin B Complex. M. S. Biskind, G. R. Biskind and L. H. Biskind.—p. 49.
 New Technic for Using Levine Tube in Biliary Intestinal Anastomoses. N. F. Hicken, Q. B. Coray and J. H. Carlquist.—p. 58.
 Care of Injured in Combat Zones. B. L. Coley.—p. 66.
 Survey Film Diagnosis of Acute Surgical Abdomen. S. Levine and L. Solis-Cohen.—p. 76.
 Fresh Fractures of Carpal Scaphoid. B. E. Oblatz.—p. 83.
 Hermaphroditism. H. F. Bettinger.—p. 91.
 Acute Cholecystitis. E. L. Eliason and L. W. Stevens.—p. 98.

Nutritional Deficiency in Etiology of Menorrhagia.

According to the Biskinds the liver of a rat loses its ability to inactivate estrogen in vitamin B complex deficiency. Observations on 104 patients provided evidence that menorrhagia, metrorrhagia, cystic mastitis, premenstrual tension and probably uterine myomas as well are caused by failure of the liver to inactivate estrogen owing to deficiency of factors of the vitamin B complex. Of 39 patients who were observed primarily because of the presence of lesions of nutritional deficiency, 37 had a history of one or more conditions related to excess estrogen. Of 52 patients whose main complaint was one of the latter conditions and who were examined for evidences of nutritional deficiency, every one had signs or symptoms or both characteristic of B avitaminosis. Prompt and often dramatic responses were obtained in the gynecologic conditions with vitamin B complex orally, parenterally or by both routes.

United States Naval Med. Bulletin, Washington, D. C.

42:1-268 (Jan.) 1944. Partial Index

- Chemotherapy in Management of Acute Appendicitis. W. L. Berkley and H. C. Watkins.—p. 1.
- Intravenous Administration of Anesthetic Agent: Comparison of Technic for Robust Patients and for Patients in Shock. J. S. Lundy, R. C. Adams and T. H. Seldon.—p. 11.
- Incidence of Acute Respiratory Infections: Experience of U. S. Navy Since 1881. D. F. Smiley.—p. 17.
- *Diagnosis of Influenza and Catarrhal Fever, Acute: Plea for Accurate Diagnosis. A. P. Krueger and others.—p. 27.
- Wartime Fractures in Navy. M. B. Coventry and H. B. Macey.—p. 34.
- Fractures of Carpal Scaphoid: Study of 10 Cases. H. G. Finn and K. J. Palmberg.—p. 38.
- Fractures of Mandible. K. M. Broesamle.—p. 47.
- Use of Special Views in Roentgenography of Knee Joint. J. D. Camp and M. B. Coventry.—p. 56.
- *Treatment of Burns: Discussion Based on Experience with 360 Cases Seen on Board a U. S. Hospital Ship (concluded). R. A. Kern and others.—p. 59.
- *Significance of Joint Pain in Young Adults. J. W. Martin Jr.—p. 83.
- Aids to Evaluation of Systolic Heart Murmurs in Selection of Naval Personnel. R. C. Parker Jr. and B. V. White Jr.—p. 87.
- Electroencephalographic Diagnosis of Organic Brain Disease. C. G. Hines, L. H. Tenney and J. Hughes.—p. 101.
- Paragonimiasis (Endemic Hemoptysis): Report of 3 Cases. J. J. Miller Jr. and D. L. Wilbur.—p. 108.
- *Tropical Eosinophilia. K. Emerson Jr.—p. 118.
- War Induced Eye Injuries. C. W. Trexler.—p. 124.
- Glycosuria with Diabetic Type of Glucose Tolerance Curves in Obese Nondiabetics. H. H. Carroll and T. B. Russell.—p. 132.
- Paradoxical Respiration. J. D. Cuono.—p. 136.
- Steel Wire Sutures. H. D. Vickers.—p. 140.
- Management of Post-Traumatic Epilepsy. J. H. Siris.—p. 144.

Accurate Diagnosis of Influenza and Acute Catarrhal Fever.—There has been a tendency since the 1918-1919 influenza epidemic to use carelessly the diagnostic designation "influenza." A wide variety of febrile respiratory conditions and even many vague gastrointestinal disorders are erroneously termed "the flu." In order to counteract this tendency the Navy introduced into its medical terminology the designation "catarrhal fever, acute" for all forms of influenza-like respiratory conditions. However, catarrhal fever has come to serve as an even more inclusive "catch-all" diagnosis than the term which it was meant to replace. From December 1942 to May 1943 the medical officers of Laboratory Research Unit No. 1 observed several hundred patients with a diagnosis of catarrhal fever, acute, at a large west coast naval dispensary. All these cases could have been given a more specific designation. Included under the diagnosis were found cases of influenza, atypical pneumonia, lobar pneumonia, septic sore throat, acute follicular tonsillitis, acute laryngotracheitis, acute bronchitis, rubella and the common cold, the latter of both afebrile and febrile types. The only cases justifying the nonspecific designation of catarrhal fever were the cases of common cold with fever—the "febrile catarrh" of the English writers. The grouping of such a wide variety of diseases under one heading leads to both diagnostic and therapeutic carelessness. Influenza is not merely nosologically distinct from other respiratory infections but is due to a specific agent, the influenza virus. This virus cannot be isolated from any of the other "catarrhal fever" group of respiratory diseases. The accuracy of the diagnosis of influenza can be put to the test of virus isolation. Influenza may be confused with the febrile type of common cold (acute catarrhal fever or febrile catarrh) and with streptococcal tonsillitis (septic sore throat).

Treatment of Burns on Board a Hospital Ship.—Kern and his co-workers report 360 cases of burns incurred by naval and military personnel. Burns constitute an important group of casualties in naval warfare, and preparedness for their treatment must include a store of supplies and an organized and trained personnel. In order to distribute the working load the treatment of burns should be assigned to the medical and not to the surgical service. Since patients with burns die not of their burns but of shock, toxemia or sepsis, the first step is to prevent or treat these complications. Pressure dressings can prevent to some degree the development of edema as well as reduce an existing edema. Particularly is this true in burns of the extremities over which an elastic bandage can be applied. Shock must be treated by adequate amounts of plasma, the

dosage being based on frequent hemoglobin determinations. The use of morphine in the relief of pain calls for an initial dose of not over $\frac{1}{2}$ grain (0.032 Gm.) subsequent doses of not over $\frac{1}{4}$ grain (0.016 Gm.) and the meticulous recording of each dose given, on a tag attached to the patient. Toxemia is most effectively met by an adequate fluid and salt intake. A prime requisite in guarding against infection of burns is the use of an aseptic technic in dressing, including the masking of attendant personnel. The preparation of the burn area for the local treatment calls for simple cleansing (liquid petrolatum and sterile cotton waste to remove fuel oil; plain soap and water) and a minimal débridement (cutting away blisters). The method of local treatment best suited to naval conditions is one that is applicable to all burns. Tannic acid, paraffin wax and triple dye are not suitable. Tannic acid must not be used on the face, ears or hands. Not one of the methods mentioned is applicable to an infected burn or in the preparation for skin grafting or to a patient with wounds or fractures. Sulfathiazole, either in 3 per cent ointment with a water soluble base or as a dusting powder with wet saline dressings, meets all requirements. Skin grafting should be done early to prevent scar formation. Many burns could be prevented in naval actions by full clothing at battle stations, by the use of antiflash gear that has been fireproofed and by the constant availability of gloves for use in case of fire or sliding down ropes, since burns of the hands are responsible for the longest periods of disability.

Joint Pain in Young Adults.—Martin made a survey of 106 recruits admitted to his hospital with the complaint of joint pain. All were white males between the ages of 17 and 24 years in preliminary naval training. All had passed normal physical examinations not more than three months prior to admission. With the exception of 5, all were examined and studied. Ninety-seven cases (92 per cent) were clinically diagnosed as rheumatic fever. Eighty-five (80 per cent) of the total presented evidence of cardiac damage. Rheumatic fever must be kept continuously in mind in all cases of joint pain in young adults. It must be considered as the causative factor until ruled out by careful observation and cardiographic studies.

Tropical Eosinophilia.—Weingarten described under the term tropical eosinophilia an endemic disease which is apparently widespread in the coastal regions of southern India, 81 cases having been observed by him during five years' practice in Bombay. It is characterized by a chronic paroxysmal cough, frequent attacks of asthmatic breathing, weakness, listlessness, loss of weight and appetite, and leukocytosis ranging from 20,000 to 60,000, apparently due chiefly to an increase in eosinophils. The onset of the disease is gradual with a low grade fever, splenic enlargement, apathy and weight loss. After about a week, hacking paroxysms of coughing begin, usually occurring in the early morning hours and frequently associated with moderately severe asthmatic attacks resembling true asthma in their response to adrenergic drugs. Physical examination at this stage reveals the constant presence of numerous sibilant and sonorous rales throughout the lungs and prolonged expiration. After two to three weeks the fever subsides but the remaining symptoms persist and become chronic, lasting for a period of years if untreated. Emerson reports the history of an ensign aged 30 who developed the typical symptoms of tropical eosinophilia eight months after his return from India. A rapid disappearance of all evidence of the disease followed the oral administration of carbarsone. It seems probable that the man acquired his disease during his stay in India but that it remained latent until his powers of resistance were diminished by a severe intercurrent infection. When he had sufficiently recovered from the more severe symptoms of his liver abscess it became possible to recognize the milder signs of tropical eosinophilia. With increasing contact between the United States and India it is likely that more cases of tropical eosinophilia will turn up in this country. Since little is known of its etiology, epidemiology or total geographic distribution, there is no reason to think that it may not be widespread in tropical climates. In spite of the failure thus far to find an etiologic agent, the remarkable therapeutic effect of arsenic points toward a spirochetal or protozoan infection of some sort.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:773-804 (Dec. 18) 1943

- Treatment of Sciatica: An Essay in Debunking. A. Hurst.—p. 773.
Effect of Pregnancy and Parturition on Pulmonary Tuberculosis. R. C. Cohen.—p. 775.
Differential Diagnosis of Chronic Sciatic Pain: Note with a Short Analysis of 100 Recent Cases. W. P. U. Jackson.—p. 776.
*Thymectomy for Myasthenia Gravis. M. Nellen.—p. 778.
Effect of Chemotherapy on Mortality from Pneumonia in Glasgow. T. Anderson.—p. 779.

Thymectomy for Myasthenia Gravis.—Nellen reports the case of a nurse, aged 23, who had myasthenia gravis. She responded to treatment with neostigmine, but her requirements rose so that after two months she needed 225 Gm. daily. Removal of a part of the thymus effected a slight improvement, but because her condition deteriorated again in spite of neostigmine treatment the remaining thymus was removed. Neostigmine medication had to be continued for a number of weeks after the operation, but gradually she needed less and less and finally felt strong without it.

Lancet, London

2:721-752 (Dec. 11) 1943

- Health of Factory Worker in Wartime. S. A. Henry.—p. 721.
Infected Burns and Surface Wounds: Value of Penicillin. D. C. Bodenham.—p. 725.
Modern (Nonvolatile) Anesthesia: Observations on 1,000 Cases. F. B. Mallinson.—p. 729.
Lobar Pneumonia Treated with Sulfamethazine and Sulfadiazine. T. N. Morgan and R. Wylie Smith.—p. 731.

Medical Journal of Australia, Sydney

2:433-452 (Nov. 27) 1943

- Studies in Deposition of Lead in Bone: II. Calcium-Phosphorus and Lead-Phosphorus Ratios. F. R. Barrett.—p. 433.
Syndrome of Appendicitis, with Special Reference to Absence of Signs in Right Iliac Fossa. C. Craig.—p. 435.
*Mycotic Ear Infections at an Advanced Allied Base. E. L. Davis.—p. 437.
Study of Treatment of "Tropical Ear." H. Earnshaw.—p. 438.

Myotic Ear Infections.—According to Davis, fungous infection of the external auditory canal is a fairly prevalent condition in tropical regions. He reports observations on 22 patients who were examined and treated during June and July 1943. Three stages of this disorder can be observed. In the first stage the ear feels sore and tender to the touch; chewing may be painful. The auditory canal often contains soft semi-fluid wax and debris of flecks of a white foamy substance. This stage was not seen in this series of cases, since the soldier usually presents himself in stage 2 or stage 3. In the second stage, which was seen in 16 of the patients, the ear is tender and chewing is painful. The canal is coated and sometimes completely blocked with soft, moist, sebaceous-like detritus, often with a greenish tinge due to a secondary infection with *Bacillus pyocyaneus*. After the ear has been syringed the canal wall is found to be red, with excoriation of the epithelial lining. The drum is not commonly affected. In the third stage the canal is swollen, often obliterated and very painful. The pain is worse at night. Sometimes when the swelling subsides an otitis media is revealed. All patients had a moderate pyrexia. In the initial stages the ear was syringed and swabbed with alcohol to dry out the canal. Glycerin and ichthammol (10 per cent) tampons were inserted. Subsequently the canals were swabbed with alcohol once a day and painted with carbolic fuchsin. When the canals were still "moist" after treatment with carbolic fuchsin, sulfathiazole powder was insufflated and the condition rapidly dried up. The six patients in the stage 3 category were admitted to the hospital. Apart from routine treatment, analgesics were given and heat was constantly applied by hot water bags. The average duration of treatment was seven days for cure. In eleven of the specimens submitted for pathologic examination, a fine mycelium was identified (trichophyton). A number of the patients had coexistent mycotic skin disease. Transmission of the infection to the ear may have occurred by towels.

Praxis, Bern

32:189-206 (March 11) 1943

- Treatment of Pyodermas with Sulfonamides. H. Fuchs.—p. 189.
*Role of Sugar in Physical Exertion. R. M. Du Pan.—p. 196.

Role of Sugar in Physical Exertion.—Du Pan studied the role of sugar in physical effort during eighteen months in military service. In subjects who are in a normal status of training the sugar reserves are sufficiently great to permit exertion of long duration without the blood sugar going greatly below normal. He mentions several investigations, which show, on the one hand, the uselessness of "doping" with sugar during violent but short exertion and, on the other, the role of foods high in carbohydrates during the days preceding an effort of long duration. The physician can recommend to his patient foods rich in starches on the day preceding great exertion in order to permit the formation of sugar stores in the body. He should advise against excessive consumption of meats, commonly believed excellent during great exertion, because meat is chiefly composed of proteins, which, while giving a feeling of vigor, have a weak calorific power and produce wastes which impede the circulation and augment uremia.

Archivos Argentinos de Pediatría, Buenos Aires

14:263-350 (Oct.) 1943

- *Infantile Encephalitis in City of Cordoba (Argentina). J. M. Valdes.—p. 263.
Pathologic Anatomy of Epidemic Encephalitis Observed in the City of Cordoba. A. Ferraris.—p. 329.

Infantile Encephalitis in Argentina.—In the autumn and summer of 1940 and 1941 an epidemic of meningoencephalomyelitis occurred in Cordoba, Argentina. Although isolated cases had previously been observed, it was the first epidemic of encephalitis to be recognized in Argentina. Eighty cases were observed by Valdes in the University Hospital. The incidence was higher in infants and young children. Clinical features were variable. As a rule, the onset of the disease was acute, characterized by high fever, headaches, convulsions, delirium, unconsciousness, agitation, meningeal signs and coma. In many cases the onset of sensory and motor disturbances was preceded by or associated with gastrointestinal symptoms, such as diarrhea, vomiting and abdominal pain. Especially in infants the gastrointestinal symptoms often overshadowed the nervous disturbances, misleading the diagnosis. Spinal fluid examination in these cases was decisive. In 13 cases the initial symptoms were less sudden and severe, and manifestations referable to the nervous system developed more slowly. A most striking sign of the disease was profound coma associated with sensory and motor abnormalities. Paralysis were usually of short duration and irregular distribution. Bulbar and cerebellar involvement were the rule with convulsions, athetosis, palatal and facial paralysis and terminal respiratory paralysis. Tendon reflexes were sometimes unobtainable, often accentuated. Abdominal reflexes were, as a rule, absent. Cerebrospinal fluid changes were invariably present in the first days of the disease, being characterized by lymphocytosis, high total protein content and positive Pandy test. The prognosis of the disease was very poor. Of 67 patients acutely ill 40 per cent died and 16 per cent displayed severe sequelae such as hydrocephalus, epilepsy and mental deterioration. In the whole group only 44 per cent appeared to have recovered completely without after-effects. Postmortem examination revealed venous congestion and edema of the brain, nonpurulent subcortical focal encephalitis with lymphocytic perivascular infiltration and extensive glial proliferation. There were also acute passive congestion and toxic changes in the liver, spleen, kidney and gastrointestinal tract. Bacteriologic tests, inoculation of the spinal fluid of guinea pigs, blood cultures and cultures of the spinal cord and the brain all yielded negative results. Neutralization tests with convalescent serums were negative for virus of the Japanese type B, equine encephalomyelitis of the eastern, western and Argentine (Rosenbusch) strain as well as for the St. Louis virus. The disease could be transmitted by inoculation of brain emulsion into white mice and was then transmissible from mouse to mouse. The pathogenic agent was a filtrable virus. The epidemic outbreak in human beings occurred simultaneously with a very severe epizootic among horses and was followed by an identical epizootic in fowls.

Book Notices

Principles and Practice of Rehabilitation. By John Elsele Davis, M.A., Sc.D. Cloth. Price, \$3. Pp. 211, with 8 illustrations. New York: A. S. Barnes & Company, Inc., 1943.

With the increasing interest in rehabilitation, a short textbook on the subject should have a large reading demand. Most of the current thought of rehabilitation is concerned with the reconditioning of World War II veterans. Neuropsychiatric causes constitute the largest number of medical discharges of soldiers and sailors at present. Dr. Davis carefully reviews the different psychiatric entities commonly found among veterans of World Wars I and II. A chapter on the psychologic approach of mental disease and another chapter on the theories of reeducation provide an excellent back drop for the second half of the book, which discusses psychotherapy.

A general review of many aspects of psychotherapy are given in the last four chapters. The use of occupational therapy, music, drama and education are given in outline. Suggested programs and board aims of many workers in these fields are given. It is regretted that the author did not give the results of his own experience at the Veterans Administration Facility, but relied to so large an extent on the results of others.

Mention is not made of the rehabilitation of diseases and injuries other than neuropsychiatric entities. In avoiding the large fields of reconditioning battle casualties, tropical diseases, postoperative surgery and infectious diseases Dr. Davis might well have limited the title of his book to "Principles and Practice of Rehabilitation of Neuropsychiatric Entities." On the whole the book is well written and informative, and it should be of value to those engaged in the reconditioning of neuropsychiatric patients.

Surgical and Germ-Free Techniques . . . Their Application to Experimental Biology and Medicine . . . A Symposium. Edited by James A. Reyniers, The Laboratories of Bacteriology, University of Notre Dame, Notre Dame, Indiana. Fabrikoid. Price, \$5. Pp. 274, with 94 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

This book, in two sections, is a collection of the papers read in a symposium held at Notre Dame in November 1939 to present in concise form the latest information in two specialized fields. The first section is on the science and practice of microdissection and microinjection with chapters devoted to the design of machines for use in bacteriology, the application of surface chemistry to the study of living cells and the application of micrurgy to botany, with special reference to phytopathology. The second section, devoted to germ free methods, takes up first the problem of isolation and the elimination of contamination, describing in detail the development of the machines for rearing and working with germ free animals, with a description of the technics employed, using a variety of animals and fowl. One chapter is devoted to the use of the mammalian fetus as an experimental animal in bacteriology, virology and immunology, with the technic employed, describing the limitations and certain results obtained. One chapter is devoted to the germ free culture of certain invertebrates and describes several technics as used for protozoa, nematodes and insects. Another chapter considers the application of such germ free methods to botany, with particular emphasis on its application in the study of the physiology and pathology of higher plants, where "aseptic technic is highly desirable if not absolutely essential." The last chapters are devoted to the control in nurseries of cross infections transmitted by way of the air. A variety of mechanical and ultraviolet radiation barriers are described and are used in combination with air conditioning installations for adequate ventilation. Bacteriologic studies showing comparative results for various types of barriers both with and without air conditioning are given. These cover both the general bacterial level under given conditions of occupancy and the transmission of bacteria from a given point of dissemination to all parts of the nursery. All studies are bacteriologic, and no clinical observations are recorded. In addition to the concise presentation of some particular phase of the subject, each chapter closes with a bibliography. For any one interested in these special fields, this book should prove valuable both for the subject matter and for the bibliographies.

Endocrine Disorders in Childhood and Adolescence. By H. S. Le Marquand, M.D., M.R.C.P., Physician, Royal Berkshire Hospital, London, and F. H. W. Tozer, M.D., M.R.C.P., Sometime Clinical Assistant, Royal Berkshire Hospital. Cloth. Price, 15s. Pp. 298, with 49 illustrations. London: Hodder and Stoughton, Limited, 1943.

Endocrinology is a much disputed topic; most books on this subject present at least a few ideas which will be hotly contested. This publication is no exception. Nevertheless for a small volume it offers interesting reading and should elicit some sound practical treatments by those who will apply endocrine preparations intelligently. In the United States the present edition will not displace other well known works, but it will be a useful addition to the libraries of teachers and others who follow closely published literature as it provides a list of commercial sex hormone preparations sold in England. Since many journals do not have a policy demanding that the official, chemical or common name be included to identify a drug which may be mentioned in a communication, the reader is often at a loss to know whether such names as Erugon, Polyansyn, Lutocyclin and Aristostab are androsterone, anterior pituitary, corpus luteum or gonadotropic preparations. This book will provide also useful information on the treatment of endocrine disorders in children.

The Arthropathies: A Handbook of Roentgen Diagnosis. By Alfred A. de Lorimier, A.B., M.A., M.D., Colonel, Medical Corps, United States Army. Cloth. Price, \$5.50. Pp. 319, with 678 illustrations. Chicago: Year Book Publishers, Inc., 1943.

With emphasis on a visual presentation, Colonel de Lorimier carefully and systematically leads the reader through the impressively large field which comprises the arthropathies. These he divides etiologically into closely related groups, such as those associated with stress, the osteoarthropathies, or a second, the true arthritides, due to protein reactions, toxins or bacterial invasion. Chapters are expanded only moderately beyond outline form, yet all essential points seem to be presented and clearly stated. Through use of eye catching subdivisions and a uniformity of presentation in each chapter, salient features between any two or a group of lesions are easily compared without need of extended reading. Each brief chapter, covering an arthropathy, begins with a list of synonyms; then follow the roentgen criteria both in early and in later stages with—importantly—attention being drawn to early soft tissue reactions which may give a clue to diagnosis before any bone changes become visible. Next come the corroborative roentgen findings, concise statements on incidence, age, sex, sites of usual involvement, finally statements as to history, accompanying physical findings, clinical course, even the laboratory findings when significant. The bibliography at each chapter end is well selected and adequate. There is an abundance of well selected and uniformly good illustrations selected not only from the writer's own large teaching collection but also from those of his associates and colleagues throughout the country. These are presented in their much more satisfactory form as reproductions of negatives rather than positives. Helpful placement of numerous arrows shows the diagnostic roentgen findings in each case, though the excessive length and tortuosity of the arrows somewhat offend the eye and mar the films.

Man in the Air: The Effects of Flying on the Human Body. By Herbert S. Zim. Cloth. Price, \$3. Pp. 332, with drawings by James MacDonald and photographs. New York: Harcourt, Brace and Company, 1943.

This is an excellent presentation of the topic of aviation physiology broadly interpreted. The writing is directed to the nontechnical reader, but the author is eminently successful in presenting the results of modern research and new technological developments in such a lucid manner that no intelligent reader need feel completely baffled. The book consists of twenty-two chapters and has over three hundred pages, but good typography and many illustrations in the text contribute to its readability. There are over fifty full page reproductions of photographs, which are in general well selected and are accordingly valuable additions to the text. Drawings and diagrams are used extensively. The author commences his book with short chapters on the atmosphere and on bodily functions. Chapters follow in which the problems of temperature and acrobolism are discussed and modern protective devices are described. The effects of high acceleration are described, and the special functions of

which time the crusts may be removed with cotton tipped probes. A little irrigation may again be necessary to remove the more adherent crusts. The mucosa is now thoroughly massaged with Mandl's pigment and the treatment is finished with a liberal spraying of warm camphor, menthol and petrolatum solution. As an alternative to Mandl's pigment (iodine 0.3, potassium iodide 0.6, glycerin to make 30), since it is best to rotate the various paints, Peruvian balsam may be used. Other solutions that may be painted or massaged into the mucosa are olive oil, thymol 1:10,000, resorcinol 1:200, phenyl salicylate 1:1,000 and sanitas fluid 1:50.

When ozena is present a spray of solution of formaldehyde U. S. P. diluted 1:100 preceded by cocaineization is often effective, as is the massage of "scarlet red emulsion" at the conclusion of a treatment.

Nasal packing for thirty minutes with simple syrup followed by irrigation with isotonic solution of sodium chloride is another line of therapy, while painting the nasal mucosa with a 1 part of zinc chloride to 30 parts of glycerin following nasal irrigation is another approach. Cotton plugs saturated with isotonic solution of sodium chloride are inserted into the nose sufficiently large to obstruct half of the lumen of the nostril and kept in situ for several hours or strips of ribbon gauze medicated with iodoform, sanitas, ichthammol or boric acid and wrung out of sterile water will be found of value.

All these measures indicate that a short course of cleansing, painting and packing should be meticulously carried out in the office several times a year while the patient continues to carry out his instructions at home.

Vaccine therapy has not proved successful. The several operative procedures that are known at the present time are paraffin injections, ivory implantation, the Lautenschlager operation and the Halle operation.

TESTING FOR SCHIZOPHRENIA

To the Editor:—Is there any connection between the Bárány test and schizophrenia? Is a negative Bárány test typical for schizophrenia? If not, does a negative result merely point to an organic base for the projection mechanism in schizophrenia? Where would you locate the seat of this projection mechanism, if any? In clinical psychiatry can the association test be regarded as a valuable help in the differential diagnosis of schizophrenia, psychoneurosis and manic-depressive psychosis? In a questionable case can one rely on this test for final diagnosis? Do you think that this test should play a major or decisive role in securing the proper diagnosis?
M.D., North Dakota.

ANSWER:—There is no definite relation between the Bárány test and schizophrenia. However, some authors have described postural reflex changes to body rotation as characteristically altered in some schizophrenic patients (Schilder, Paul: *Mind: Perception and Thought in Their Constructive Aspects*, New York, Columbia University Press, 1942).

The association test is a useful psychologic test in clinical psychiatry. The differential diagnosis of schizophrenia, psychoneurosis and manic depressive psychosis is best made on the basis of the history, the complete neuropsychiatric examination and careful evaluation of the psychodynamic factors. It would be advisable not to rely on the association test as the most important diagnostic aid.

Work on the basis of schizophrenic projection mechanisms has been done by many. The following references are recommended:

- Association for Research in Nervous and Mental Disease: Vol. X, *Schizophrenia*, Baltimore, Williams & Wilkins Company, 1931.
- Lewis, N. D. C.: *Research in Dementia Praecox*, New York, the National Committee for Mental Hygiene, 1936.
- White, W. A.: *The Language of Schizophrenia*, *Arch. Neurol. & Psychiat.* 16: 395 (Oct.) 1926.
- Gillespie, R. D.: *Clinical Differentiation of Psychogenic and Physiological Disorders*, *Brain* 51: 254 (June) 1928.
- Malamud, William: *Outlines of General Psychopathology*, New York, W. W. Norton & Co., 1935.
- Noyes, A. P.: *Modern Clinical Psychiatry*, Philadelphia, W. B. Saunders Company, 1940.

GROWING BREWERS' YEAST

To the Editor:—Will you be so kind as to give me the formula for a culture medium suitable for growing brewers' yeast? Many of the culture mediums produce a product with a very foul smell. The culture mediums used by brewers produce a pleasant smelling product.

James L. Crawford, M.D., Laredo, Texas.

ANSWER:—The best culture medium for growing brewers' yeast is brewers' wort, which may be prepared as follows: A corn mash is made by adding 240 Gm. of corn grits to 1,200 cc. of tapwater. Autoclave for one hour at 15 pounds, then cool to 70 C. Malt mash: Three hundred and sixty Gm. of ground barley malt is added to 2,000 cc. of water and held at 40 C. for one hour. It is then heated in a water bath to 70 C. and

added to the corn mash. Continue heating at 69-72 C., with stirring, until all the starch has been converted, using hundredth normal iodine solution as indicator. Strain the liquid from the coarse mash through a cheesecloth and autoclave it for thirty minutes at 15 pounds. Filter through paper and cool to 45 C. (leave in refrigerator over night), then filter out the cold fraction precipitate. Adjust the specific gravity to 1.04 and the pH to 5.3. Divide into flasks in appropriate quantities for storage and sterilize in autoclave. For plates or slants add 1.6 per cent agar to the wort.

If the wort is obtained at a brewery it should be drawn before the hops are added and should then be treated as mentioned after straining through cheesecloth.

Inoculate with about 3 Gm. of moist yeast per liter of wort and incubate at room temperature. The yeast crop will be greatly increased if a current of sterile air is passed through the culture during incubation.

EXTENSIVE TONSIL OPERATION

To the Editor:—During a tonsillectomy all the mucous membrane was dissected from the base of the tongue between the circumvallate papillae and the base of the epiglottis and from one side of the pharynx to the other. I never heard of such a procedure. I should like an explanation and comments. Does it cure allergy and asthma? Is it fair to the patient to refer to this procedure as getting all the lymphoid tissue in the throat (this is impossible) or to say that the lingual tonsil is removed (this is ambiguous); the patient understands neither. The results are undesirable, as any one might anticipate. Should not this possibility, or certainty, and the fact that the operation is new and controversial be discussed with the patient before doing it? There is no question of a suit; the time for this has passed. Such happenings are far too common, and I think some publicity and warning would do good to the profession at large both as to the procedure and as to the description, which quite naturally deceived the patient.
M.D., Ohio.

ANSWER:—This query is difficult to answer, as some of the facts cannot be verified and because the type of operative procedure described cannot be accurately identified. It may be said at the outset that no type of tonsil operation will cure asthma or other allergic states. The removal of diseased tonsils may improve the general physical condition of a patient suffering from those conditions, but no more could be anticipated.

There is an operation called expanded tonsillectomy which has been described in detail by Thomas R. French in Jackson and Coates's textbook on diseases of the ear, nose and throat. The procedure in question may not be the one advocated by French, but it may be useful to say a few words about the latter because of some resemblances between them. This operation aims not only to remove when necessary diseased faucial tonsils but developed lymphoid tissues below and between the two faucial tonsils. The extra tonsillar lymphoid tissues include what are commonly called the lingual tonsils and what French calls the lymphoid apron or: the base of the tongue and behind the circumvallate papillae.

This operation, while not practiced widely, has been recommended by reliable specialists and accepted for description in a textbook edited by men of the highest standing.

If the procedure described in the query is the same as the so-called expanded tonsillectomy and was properly performed, there should have been no undue after-results. Of course the patient should have been informed that this was not the usual type of tonsillectomy. The fact that an operation is new, however, or not widely practiced, should not be held against it; it needs only to be done with discrimination and skill, and no improper claims are to be made for it.

UMBILICAL HERNIA IN INFANTS

To the Editor:—In a recent article on the subject of umbilical hernia in infants, the statement is made that "the tongue and slot strapping has proved most effective and is the easiest type of strapping for a parent to apply successfully at home." I have always strapped these hernias with 2 or 3 inch width adhesive after invaginating the navel between lateral folds of tissue. If the "tongue and slot" procedure differs from this method I would appreciate learning the details.

J. Pancoast Reath, M.D., St. Davids, Pa.

ANSWER:—The purpose of strapping umbilical hernias is, of course, to maintain constant reduction. Details as to how this can be done can hardly be given dogmatically. If simple strapping with 2 or 3 inch wide adhesive after invaginating the navel between folds of skin has given satisfaction in maintaining reduction, this may be continued by those who have obtained good results by this method. The writer's interpretation of the "tongue and slot" procedure is as follows: A segment of tongue depressor is placed vertically and on edge over the umbilical hernia and pressed downward. This brings the skin on each side together over the slotlike depression made by the invaginated segment of tongue depressor, and adhesive straps are applied to maintain the reduction.

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MEDICAL EDUCATION TODAY

REPORT OF CHAIRMAN OF THE COUNCIL ON
MEDICAL EDUCATION AND HOSPITALS

RAY LYMAN WILBUR, M.D.

STANFORD UNIVERSITY, CALIF.

These are great days for medicine. On all sides we are seeing the benefits of scientific medicine, of medical research and of good medical education. Procedures in the prevention of disease are being put into effect for millions of men and women in uniform. The deserts of Africa and the jungles of the South Seas have become new hazards for our armies—hazards that would have been almost prohibitive without an understanding of yellow fever, typhoid, dysentery, malaria and other diseases due to organisms that can live in our bodies and destroy or damage them. New procedures for the prevention and cure of infections, new technics in surgery and new methods of classifying men into groups for different types of national service all depend on the men and women trained in our medical schools and hospitals. Nutrition has become a mass operation under scientific guidance. Everywhere we turn in our civilization under the present strain of war we find science and the trained man and woman giving indispensable service.

Since this is as true of our enemies as it is of us, there can be no letup in our efforts to know all that is known and to seek to know more. There is a premium on research such as we have never seen before.

How wonderful it is to realize that we live under the universal laws of nature. When once known to us, these laws can be depended on always to play the game square. Medicine and magic have been completely divorced. The variable and unpredictable operation of the central nervous system remains our least understood area of knowledge; but even in the fields of the mind we are sensing the beginnings of scientific procedures. Through a vast volume of words, phrases and speculations occasional shafts of light are showing. We are beginning to see how environment and changes have followed us through our evolutionary rise out of the sea.

As our knowledge and experience grow, so must our educational methods change and develop. Just now medical education is under pressure, with continuous session, with modified courses, with shortened hospital training and with many professors absent on the battle

fronts of the world. Fortunately the whole structure of medicine has been held together. So far the frame has not changed materially, but there is no likelihood of our going back to many of our old ways. As practical experience has brought about the discarding of much old therapeutics and old thinking, so must medical education discard freely in order to make room for the new.

Medicine based on pills and potions is becoming obsolete. The new physiology, with the help of physics and chemistry, has taught us many ways to deal with the living body that were only dreamed of a decade ago. Blood plasma is now a part of our everyday language. Biologic thinking is replacing empiricism. The last war is said to have put orthopedic surgery on its feet. This war may well do the same for physical medicine. Those treatments involving the use of heat, cold, water, electricity, movement and massage have striking biologic responses, including effects on psychic reactions, more potent than many of the drugs gathered through many centuries by trial and error.

The medical student of today needs to have his instructors fan over the grist of the past and select carefully those subjects on which he can best spend the limited period of his training. Historical sequence is important and entertaining but ought not to lead to engorgement of the student's mind with the trash or near trash of the past. As I have said before, on other occasions, time is the only real possession of the doctor; certainly it is the one thing that ought not to be wasted for the embryo doctor or intern.

Along with the revolutionary changes in medicine itself we are undergoing rapid and even kaleidoscopic social changes in which medicine is involved. There is no escape from the steady growth of new phases in the practice of medicine and surgery. If the physician can participate in and guide these changes, all will profit more. If he does not, others will; for the public knows better all of the time just what medicine offers to human beings in the way of guidance, comfort and protection.

It seems to me that in the hospitals and medical schools we have centers which should be used by the medical profession in the development of plans for widespread care of the sick. It is inevitable that more and more subsidiary help will be needed to make it possible for the carefully trained physician to do what he is trained for. Nurses, laboratory workers, physical therapists, technical assistants, secretaries and pharmacists multiply what the physician can do for his patient and for the public. These should be organized by the doctor and not for him. There is a great field for the units of government in public health but not in

the private care of the sick. Sickness is individual, personal; and when it has no public health aspect it should remain a family and personal responsibility. Facility in making medical care available to all will come through organized procedures on the insurance principle under the guidance of the profession, or it will come as a procedure of government, cursed with the inevitable, inelastic, tradition-ridden, cautious bureaucrat. The way we use the hospitals and medical schools of today will largely determine the medical future of our people.

Points to be borne in mind with regard to the medical course.

During this period of continuous session in the medical schools, of the shortage of interns and practicing physicians and the diversion of a considerable portion of the medical profession to war service, there are a few points that I think should be borne in mind in connection with the medical course:

1. There is less diversity in the preliminary training of the medical student. For many years we have had the advantage of men trained in different fields of knowledge entering our medical schools, so that a class was made up of students with some trained in the classics, others far advanced in chemistry and bacteriology, others in the field of language and literature. All of this has made medical teaching stimulating and interesting and has provided physicians with cultural interests covering the whole domain of human activity. It is desirable that as soon as possible we resume more elaborate and longer training for at least a considerable portion of our medical students.

2. At this time military medicine, emergency surgery, the relationship of medicine to society, and physical medicine should have special emphasis.

3. The intern year and residencies have been cut by war needs. This will lead to an unusual call for hospital training of physicians returning from war service in order to prepare themselves for general practice or for the specialties. While the specialty boards can give a certain amount of credit for military service, they cannot certify men who have not had the actual training in the laboratory or in the clinic and hospital required for the practice of a specialty. We are going to lose the medical student early and get him back after some war service demanding more training. All of this means that we must keep our medical structure elastic and responsive.

4. Nurse education needs to be reviewed in the light of our present experience. It would be desirable to prolong and diversify the period of preliminary training. Many nurses will enter executive fields requiring much more than the minimum training necessary now with the cadet system.

5. The very large number of casualties of industry and of the highway will profit from the forced experiences of war, provided our medical schools promptly mold their instruction to conform with the new knowledge of wounds of the body and of the damage inflicted on the nervous system by fatigue, malnutrition and strain.

All in all, we can take great pride in the achievements of the medical schools of our nation and look forward with confidence to the further adjustment of these war years and those of peace to follow.

READJUSTMENTS OF RETURNING MEDICAL OFFICERS

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The chief worries of young medical officers are (a) postwar postgraduate training, (b) locations for practice, (c) the overcrowding of the profession by the increased number of physicians being graduated during the accelerated war program, (d) the effect of the extension of socialized medicine and (e) specialization versus general practice. We must do more postwar planning for these returning physicians than those who stayed at home in the last war did for us who were in the services.

(a) *Postgraduate Training.*—The first of these problems is being considered elsewhere on this program.¹ The ideal method would be for every medical officer to return to his own or some other medical school or hospital for six months to two years of intensive work.² Plans are being made to provide a sufficient number of postwar hospital and laboratory appointments and to furnish financial support to the returning officers and institutions.

(b) *Locations for Practice.*—The second problem is even more serious, but it also is soluble. Every medical school receives numerous requests for physicians: I have a list of two hundred and seven communities which are in need of medical service. All of these rosters might be assembled by the new Council on Medical Service and Public Relations or the Committee on Postwar Planning of the American Medical Association, and the locations thoroughly investigated. A subcommittee of the latter is already at work on the problem.³ The Procurement and Assignment Service also has accurate data on the medical needs of many communities. Most physicians hesitate to register with commercial medical employment agencies but would welcome authentic information from the American Medical Association.

This survey should be done by personal visits. Questionnaires help but do not supply all the information needed about the areas which request physicians. Accurate figures are necessary on the population in the town and surrounding country, the number of physicians in proportion to the population and the area, the economic status and per capita wealth of the community, the schools, churches, living conditions and recreational facilities. Such an investigation will be expensive, but, with all of the present interest in the relocation of physicians, funds should be available. A great service can be rendered by the collection of accurate data on communities which are in need of physicians and which can and will support a physician. This information will be very helpful to returning medical officers, not only to those who have never been in practice, but also to those who had been established in practice, for many physicians in the last war changed to new locations on their return.

From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital.

Read before the Fortieth Annual Congress on Medical Education and Licensure, Chicago, Feb. 14, 1944.

1. Diehl, H. S.: Problems of Postwar Medical Education, this issue, p. 819. Soskin, S.: Hospital Training of Medical Graduates, to be published.

2. Davison, W. C.: Postwar Planning for Medical Education, J. A. M. A., to be published. Postwar Graduate Medical Education, editorial, J. A. M. A. 124: 39-41 (Jan. 1) 1944.

3. Lee, R. I.: Personal communication to the author.

(c) *Possible Overcrowding of Profession.*—Under the Army-Navy Specialized Training Program medical schools have increased the sizes of their entering classes by 10 per cent and are admitting students every nine instead of every twelve months, thereby increasing the output of physicians by 46.6 per cent: 10 per cent (additional students) + 36.6 per cent (admission every nine months of a class 10 per cent larger). Starting in 1945 the Army and Navy will assign to the various medical schools the premedical students being selected and prepared under the ASTP and V-12(S) programs, the Army taking 55 per cent of the places and the Navy 25 per cent. The medical schools can fill the remaining 20 per cent with students ineligible for military duty—cripples and women—who can treat the civilian population, one of our great war needs. As a result many more women probably will study medicine, for the men ineligible for the Medical Corps are very few. Perhaps it is as well, for women physicians, being "expendable" through marriage and retirement after the war, probably will remove approximately 15 per cent from this 46.6 per cent increase in young physicians. However, although the present U. S. physician-population ratio is 1:719, the increased number of graduates during the next few years will not produce overcrowding of the medical profession. Any possible excess will be absorbed by the needs of the Veteran's Bureau, the large postwar standing Army and Navy, the compulsory universal training program, the medical services of the occupied territories, and last but not least the increased demand for medical care due to the education of the public.

The greatest problem of medical care in this country is its maldistribution, with a ratio of physicians to the population ranging before the war from 1:544 in New York state⁴ to 1:5,164 in one North Carolina county.⁵ A better means of distribution of physicians is one of our greatest needs.

It is frequently forgotten that the people in some of the areas in which physicians are scarce do not have the means or desire to seek medical service. For example, Georgia has only half as many physicians in proportion to the population as Washington, D. C., yet the average physician in Washington sees as many patients per week as his Georgia colleague.⁶ In other words, the demand for medical service in Washington is twice as great as in Georgia; as a result, Washington can and does support twice as many physicians in proportion to the population as does Georgia.

A survey of three rural counties in Tennessee, Georgia and Mississippi in 1931 demonstrated that the money spent for medical care was inadequate to remunerate practitioners or to support hospitals and other medical facilities.⁷ There is a correlation between the economic situation in a state and the number of physicians therein: "Physicians behave, in the conduct of life, about as any group of sensible people would be expected to. They do business where business is good and avoid places where it is bad."⁸

Just before the war, owing to the improvement in farming conditions but more especially to the dearth

of physicians and to the absence of competition, the incomes of the keener rural doctors often were equal to those of their urban brethren and even better, if the cost of living is considered. In some areas, subsidy by the community has been attempted, although this policy generally has been unsatisfactory.⁹ In recent years the number of rural physicians in North and South Carolina increased 8 per cent without subsidies. However, county, state or federal subsidies or other organized financial aid to some of these areas may be necessary to attract returning medical officers to settle there, and plans should be started now so that the funds will be available when the war is won.

On the other hand, the economic status of the community is not the only factor in the maldistribution of medical care; the interest of the population in its own health is of even greater importance. For example, in Durham, N. C., in spite of the adequacy of physicians, hospitals, baby clinics and health department, fifty-six of the one hundred counties in North Carolina in 1941 had a lower infant mortality rate than Durham, and thirty-eight of the forty-eight states in the country had a lower infant death rate than North Carolina.¹⁰ The parents either are ignorant of the medical resources available or are too careless or uninterested to use them. Fortunately the old adage "You can lead a horse to water but you can't make him drink" is no longer true. If, through advertising, a public demand can be created for automobiles, electric ice boxes, certain brands of cigarets and "patent" and home medicines (which represent 14 per cent of the present medical costs)¹¹ the people can be taught to seek adequate medical service. Better medical care can be obtained for a smaller amount of money spent in teaching the public to utilize medical facilities than would be required for subsidizing physicians to go to the areas in which they are needed.¹² The law of supply and demand is still in operation. The public gets the product it demands, whether it is medical care or a nationally advertised variety of tooth paste. However, the demand in many of these communities must be created. The American Medical Association, American Academy of Pediatrics and county, state and federal health services might employ publicity experts to conduct national, state, county and city advertising campaigns in newspapers, busses, billboards and radio and through churches, schools, the Parent-Teachers' Association, the American Legion and other organizations on the necessity for medical care.

The availability of hospitals is another weighty factor in attracting recent graduates to practice.¹³ The young, highly trained physician of today does not feel that he can practice modern medicine without access to a hospital. Even though 90 per cent of patients can be and are properly cared for in their homes or in the physician's office¹⁴ the laboratory facilities of a hospital are essential for the diagnosis of many conditions. In addition, local hospitals influence the older physicians who have kept abreast of the times to remain in rural

4. Davison, W. C.: Survey of Medical Education in the South, Nashville, Tenn., Vanderbilt University, February 1938, pp. 138-171.

5. Cooper, G. M.: Ten Years in Maternity and Infancy Work in North Carolina, South, M. J. 31: 437-442 (April) 1941.

6. Cioeca, A., and Altmann, I.: The Patient Load of Physicians in Private Practice. A Comparative Study of Three Areas, Pub. Health Rep. 55: 1329-1351 (Sept. 3) 1943.

7. Guild, C. St. C., and Falk, L. S.: Surveys of the Medical Facilities in Three Representative Southern Counties, Publication 25, Committee on the Costs of Medical Care, Chicago, University of Chicago Press, 1932.

8. Pearl, R.: Distribution of Physicians in the United States, J. A. M. A. 81: 1024-1025 (April 4) 1925.

9. Pusey, W. A.: Medical Education and Medical Service, J. A. M. A. 84: 281-285 (Jan. 24), 365-369 (Jan. 31), 437-441 (Feb. 7), 517-519 (Feb. 14), 592-595 (Feb. 25) 1925. Ordway, T. A. Medical School Effort to Provide Physicians for Rural Communities, Proc. Am. C. M. Educ., 1929, pp. 28-30.

10. Davison, W. C.: Medical and Health Education in North Carolina, M. J. 4: 14-17 (Jan.) 1942.

11. Rorem, C. R., and Isachels, R. P.: The Costs of Medicine, Publication 14, Committee on the Costs of Medical Care, Chicago, University of Chicago Press, 1932, p. 18.

12. Davison, W. C.: The Future of American Physicians, J. A. M. A. 14: 810-814 (June) 1929.

13. Sancer, W. T., in discussion on Hygiene of War, The National Distribution of Physicians in the Southern States, S. B. M. J. 30: 125-126 (Feb.) 1932. Pass, C. C., in discussion on Hygiene, p. 88.

14. Report of the Council on Medical Education, J. A. M. A. 80: 1928-1927 (June 7) 1927.

communities. The establishment of rural hospitals in North and South Carolina with the aid of the Duke Endowment is improving the medical service in the country and is attracting young physicians there. The influence of the location of hospitals on the distribution of physicians is strikingly illustrated in North Carolina; in the fifty-seven counties which have hospitals there is 1 physician to every 1,149 people, and in the forty-three counties without hospitals the ratio is 1:2,034.¹⁵ Of the 638 recent graduates who have settled in North Carolina since 1925, only 64 located in towns without hospitals.¹⁶ One of the major objectives of the Duke Endowment is to bring about a better distribution of well trained physicians by an improvement and an extension of available facilities for the practice of modern medicine which exist in and not apart from hospitals.¹⁷ A similar plan for the United States as a whole is being established by the United States Public Health Service and the Federal Works Administration.

In rural areas in which the towns are too small to support an individual hospital or too scattered to maintain a combined hospital a "medical station" with a nurse and a technician and affiliated with a medical center would increase the physician's effectiveness and improve rural medical service.¹⁸

Not only do rural communities need hospitals and laboratory facilities but equally important, if they have a hospital, they require financial assistance to enable the people to use the hospital. Bed occupancy is as vital as the beds themselves. Modern medical service cannot exist without hospitals, and hospitals cannot exist without support from endowments, state, county or federal aid, or voluntary hospital care associations. Because of present financial conditions, endowments are becoming rare, and state, county and federal aid may bring political control.¹⁹ The voluntary group hospital association seems to be the logical answer.

(d) *The Extension of Socialized Medicine.*—This is not the only solution of the problem of the maldistribution of medical care and its costs.²⁰ The medical profession today is conducting more social experiments in the methods of distributing medical services than all the proponents for change have ever conducted. Out of the two hundred and fifty or more projects that are being studied or operated by county or state medical societies it is hoped that methods may be found to supplement existing medical facilities wherever necessity demands.

The American Medical Association is not opposing the low income groups in this country in their effort to secure good medical service at a cost which they can reasonably meet. It has endeavored to discover more suitable methods to assist these people to solve their medical problems. It does oppose the exploitation of the poor, and it is unalterably opposed to any scheme that would give the poor an inferior quality of medical care.²¹

Medical care must be provided for the indigent and their dependents. At present it is available in most areas but is sometimes difficult to find, its quality is often poor and the payment for it usually is absent. Every one agrees that the poorest third of the population needs the most medical care and gets the least. The county medical societies, health departments and public welfare agencies are increasing their efforts to solve this problem. The following methods for providing medical care to the indigent from local, state or federal funds should be considered: 1. The employment of county and city physicians is the cheapest method for the taxpayer, but the medical service often is mediocre. However, it may be the only practical solution in sparsely settled areas. The payment of larger salaries and the possibility of advancement would attract better physicians. 2. Medical service to the indigent on a fee-per-call basis under the control of the county medical societies, similar to the former FERA plan²² or the present Farm Security Administration program,²³ has proved satisfactory to the patient and the physician, though it is more costly than the employment of a county physician. 3. Payment to group clinics and hospitals and traveling expenses for the 15 per cent of indigent patients who need specialist, diagnostic, surgical and hospital care are essential. Many counties and states are recognizing this responsibility. 4. Group clinics and hospitals should be provided and supported in areas which need them. 5. Medical care should be separated from unemployment insurance and cash sick benefits.

To proceed rashly without going through progressive stages will produce worse medical service than exists under the present system. Ill considered and hasty legislation is as likely to be as harmful as beneficial. Whether a generation will be necessary for the transition or a century, as in public education, only sound experiment and experience can tell.

(e) *Specialization versus General Practice.*—General practitioner care is the greatest need, as 85 per cent of illness can be handled successfully by family physicians. Only 15 per cent of the patients need specialist, diagnostic, surgical and hospital care. Economic factors and the specialty boards may decrease the present plethora of specialists. Before Pearl Harbor, 60 per cent of the graduates of Duke University²⁴ and up to 75 per cent in other medical schools²⁵ became specialists, but under the present 9-9-9 internship-residency quota plan only 17 per cent of the graduates will be able to obtain a maximum of twenty-seven months of hospital training and even this amount will not produce a specialist. The majority of recent graduates will have had only nine to eighteen months of hospital experience, most of it as rotating interns. When these medical officers return, few will be able to afford the time and money to qualify for the specialty boards and will be forced into general practice. However, on their return from the war they will need six months to two years of hospital or laboratory work to reequip themselves, for a general practitioner needs a sound scientific background as much as if not more than a specialist, so that

15. Rankin, W. S.: The Interest of the Hospital Section of the Duke Endowment in Medical Education, *Proc. Ann. Cong. M. Educ.*, 1929, pp. 38-40.

16. Duke Endowment, Tenth Annual Report of the Hospital Section, Charlotte, N. C., 1934.

17. Duke Endowment, Fourth Annual Report of the Hospital Section, Charlotte, N. C., 1928; footnote 16; Rankin, W. S.: Hospitalization, *South. M. J.* 24: 1113-1115 (Dec.) 1931.

18. Medical Care for the American People, Final Report of the Committee on the Costs of Medical Care, Chicago, University of Chicago Press, 1932.

19. Does Federal Subsidy Mean Federal Control? editorial, *J. A. M. A.* 110: 132 (Jan. 8) 1938.

20. Davison, W. C.: Should American Medicine Be Socialized, *J. A. M. A.* 122: 1067-1070 (Aug. 14) 1943.

21. Leland, R. G.: The Health of Forty Million People, *Hygeia* 17: 119 (Feb.) 1939.

22. American Medical Association Study of Medical Care, Organization Section, *J. A. M. A.* 111: 1383-1385 (Oct. 8) 1938. *Sickness Under National Health Insurance, Medical Economic Abstracts*, *ibid.* 111: 1475-1476 (Oct. 15) 1938. *Sinai, N.; Hall, M. F.; Hogue, V. M., and Steep, M.: Medical Relief in Michigan, Ann Arbor, Mich., Edwards Brothers, 1938.*

23. Williams, R. C.: The Medical Care Program for Farm Security Administration Borrowers, *Law & Contemp. Probl.* 6: 583-594, 1939.

24. Davison, W. C.: The First Ten Years of Duke University School of Medicine, *North Carolina M. J.* 2: 527-532 (Oct.) 1941.

25. Weiskotten, H. G.: Present Tendencies in Medical Practice, *Bull. A. Am. M. Coll.* 2: 29-47 (Jan.) 1927; *Tendencies in Medical Practice*, *ibid.* 7: 65-85 (March) 1932.

he may be capable under all circumstances of advising the family whether the patient needs to consult a specialist.²⁶ Fortunately the opportunities for preparation for general practice are more abundant than are the residencies required by the specialty boards. If a graduate plans to enter general practice—a consummation much to be desired—a straight medical internship for one year, a straight pediatric internship for six months and a straight obstetric internship for six months would equip him much better than the usual rotating service.²⁷

One difficulty in persuading young graduates to go into general practice is their erroneous feeling that it does not carry the same dignity as that of a specialty. Since the specialty boards were created, the students have increasingly obtained the impression that general practice is what the specialists discarded. As a matter of fact, general practice is just as much a specialty as pediatrics, and the present misunderstanding would be corrected if general practice had its own specialty board and requirements.

Furthermore, the specialties are overcrowded.²⁸ For example, there are 4,205 pediatricians, of whom 2,205 give their full time to the specialty;²⁸ 2,162 of them have been certified by the American Board of Pediatrics.²⁹ It is possible that the opportunity for successful pediatric private practice may be impaired because of a supply greater than the demand. It is doubtful whether the public can support a larger number of pediatricians, as half of the babies born each year are in families on relief or with an annual income of less than \$1,000. Fair remuneration to the physician is essential to good care.²⁸ As the average age of practicing pediatricians is approximately 40 years and as replacements will be slow, graduates of today who wish to care for children may have difficulty as specialists and probably should enter general practice or obtain health department positions, even though this statement may be interpreted as a lamentation of Jeremiah or a tribulation of Job.³⁰

The fact that 60 to 75 per cent of the prewar graduates are, or plan to be, specialists, who are needed by 15 per cent of the patients, is an indication not only of the overcrowding of the specialties but also of the urgent need and wide open opportunities for good general practitioners. This plethora of specialists has caused such competition and crowding that in many communities the financial rewards of general practitioners, with their reduced competition, are higher than those of specialists. The modern medical curriculum often is blamed for this trend toward specialization, but the tide toward general practice is turning without any changes in the medical schools; it is a response to economic conditions.³¹ However, the number going into rural practice is still falling²⁵ except in North and South Carolina.³² In these two states, as previously mentioned, the establishment of rural hospitals through the aid of the Duke Endowment is improving medical service in the country and attracting young physicians there.

26. Welch, W. H.: Changing Viewpoints in Medical Education, *South. M. J.* 24: 1121-1124 (Dec.) 1931.

27. Davison, W. C.: Opportunities in the Practice of Medicine, *J. A. M. A.* 115: 2227-2232 (Dec. 21) 1940.

28. Veeder, B. S.: The Position of Pediatrics in the Present Day Practice of Medicine, *Pennsylvania M. J.* 44: 1233-1239 (July) 1941.

29. Aldrich, C. A.: Personal communication to the author.

30. Davison, W. C.: The Future of Pediatrics, *J. A. M. A.* 117: 2283-2284 (Dec. 27) 1941.

31. Davison, W. C.: Duke University School of Medicine, *Tr. North Carolina M. Soc.* 74: 35-29, 1927.

32. Duke Endowment, First Annual Report of the Hospital Section, Charlotte, N. C., 1925; footnote 16. Mayers, L., and Harrison, L. V.: The Distribution of Physicians in the United States, New York General Education Board, 1925. Rappleye, W. C., in discussion on Weiskotten: Tendencies in Medical Practice,²⁵ p. 46.

CONCLUSIONS

1. Hospitals and laboratories, especially those attached to medical schools, should increase their appointments to provide postwar postgraduate training for the returning medical officers.

2. Authentic information on locations for practice, possible overcrowding of the profession and socialized medicine should be collected by the American Medical Association, so that it can be furnished to the returning medical officers.

3. The majority of the recent graduates who are in the armed forces probably will go into general practice.

PROBLEMS OF POSTWAR MEDICAL EDUCATION

HAROLD S. DIEHL, M.D.

MINNEAPOLIS

In the decade before the war, medical education in this country reached a standard of excellence hardly dreamed of a generation ago. Teaching staffs were stronger and facilities more adequate than ever before. Entrance requirements were raised, curriculums revised and expanded. Students admitted to medical schools were carefully selected from large numbers of potentially qualified applicants. The result of all this, presumably at least, has been that our medical graduates as a group are better qualified than ever before to undertake the practice of medicine.

With the war, changes in medical education were inevitable. Premedical requirements have been reduced from three or four years to two years of college work. The medical course proper has been accelerated by the elimination of summer vacations, thereby concentrating the work of four academic years into three calendar years. The number of students accepted for admission to medical schools has been increased by approximately 10 per cent. New courses in first aid, tropical medicine and war medicine have been introduced into the curriculum, and special emphasis in regular courses has been given to such medical problems of the war as shock, hemorrhage, fractures, communicable disease control, sanitation and aviation medicine.

In postwar America the status of medical education will depend primarily on the conditions existing in our country at that time. If we should lose the war or if our enemies are able to force a stalemate, we can anticipate either complete regimentation or continuation of our country as a vast armed camp. In either case the pattern of medical education will be determined not by medical educators or by the medical profession but by government itself.

Assuming, on the other hand, that we shall be victorious, the termination of the war will require decisions as to whether these changes in medical and premedical education shall be continued. Most of them were considered undesirable when introduced and were accepted with reluctance by medical educators. Hence there is certain to be much sentiment to return immediately and completely to the prewar program of medical education. This program was developed on the basis of long experience and critical evaluation and was considered reasonably sound and adequate. Certainly such a pro-

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gram should be accepted as at least the framework of the medical education of the future.

Yet to return blindly to a pattern of the past is to close our eyes to the possibility of improvement by breaking with tradition. Wartime experience with the accelerated curriculum and reduced entrance requirements should be carefully evaluated and considered in postwar planning. It is quite possible that some of the changes in medical education which have been made as adjustments to wartime conditions may have merit also for peacetime. There has, for example, long been concern over the increasing age of graduates from medical schools. With three or four years of college work preparatory to the study of medicine, four years in medical school and one to two years of internship, most physicians are between 27 and 28 years of age before they are ready to begin independent professional work. Add to this several years to establish a practice or three to five years of graduate training and such physicians are 30 years old before they are in a position to establish a home or to start the practice of a specialty. Perhaps the pendulum has swung too far in the direction of the prolongation of undergraduate medical training.

Population per Physician in Various Countries

United States.....	1 physician to 750 people
France.....	1 physician to 880 people
Netherlands.....	1 physician to 1,250 people
Denmark.....	1 physician to 1,400 people
England and Wales.....	1 physician to 1,490 people
Germany.....	1 physician to 1,500 people
France.....	1 physician to 1,600 people
Norway.....	1 physician to 1,760 people
The Netherlands.....	1 physician to 1,820 people
Belgium.....	1 physician to 1,850 people
Sweden.....	1 physician to 2,800 people

Medical education has never been static. Hence it is probable that the postwar period will bring forth certain modifications in the program based on wartime experience. These modifications are likely to be in the direction of more attention to the adjustment of teaching loads to available staff and facilities; continuation of a certain amount of acceleration; further trends from didactic to laboratory and clinical teaching, and more emphasis on preventive medicine in its broadest aspects such as nutrition, healthful living, geriatrics and industrial hygiene, as well as the prevention and control of communicable diseases.

SIZE OF MEDICAL CLASSES

In the early years of medical education in this country the number of students was limited only by the number of applicants and by their ability to pay the required fees. At one time 162 medical schools existed, and more were organized whenever there were prospects of additional students. Establishment of standards of accrediting for medical schools and the reduction of their number to 66 medical schools and 10 schools of basic medical sciences caused a great reduction in the number of graduates.

At one time prior to the accrediting of medical schools the annual number of graduates reached 5,747. This was in 1904, when the total population of the country was approximately 84,000,000. With the elimination of substandard schools a rapid decline in the number of medical graduates occurred, reaching a low of 2,520 in 1922. Subsequent to that date the number of graduates gradually increased to approximately 5,200 a year

in the several years before the war. This is almost 50 per cent more than the number of physicians who die each year and represents an annual net increase of 1,600 to 1,800 physicians for the country as a whole, a rate of increase among physicians in excess of that among the general population. Furthermore, at the beginning of the war the United States had the highest ratio of physicians to population of any country in the world. The accompanying table¹ shows the prewar population per physician in countries with the better developed medical facilities.

The accelerated medical course and the increase in the size of classes will produce about 7,500 graduates annually. This is approximately double the number of deaths among physicians in recent years. The war will doubtless cause an increase in the death rate among physicians, but even allowing for this the accelerated program of medical education should provide a sufficient number of physicians to meet the needs of both the armed forces and the civilian population at the close of the war. Whether the number of medical students in training should then be immediately reduced is dependent on several factors at present unpredictable. Among these are (1) the number of physicians who will be killed or disabled during the war, (2) the number who will be retained in the armed forces or other governmental agencies for domestic and foreign service and (3) the postwar need, demand, facilities and organization for the provision of medical services to the civilian population.

It is clear however that, in the interest both of sound medical education and of good medical care, medical schools should appraise their situations and reduce the size of their student bodies to the number that can be properly trained with available staff and facilities. Unfortunately, some of the large increases in the number of students accepted for training during the war have been in medical schools with relatively meager facilities. Such situations should be corrected without delay.

SELECTION OF MEDICAL STUDENTS

In recent years the number of applicants for admission to medical schools has been more than twice the number of students accepted. This has made selection possible and doubtless has resulted in a higher average level of ability among medical students than existed prior to such selection. Even so, most medical schools accept the last 20 to 25 per cent of students with distinct reservations as to their qualifications, intellectual or personal, for the study or practice of medicine. If possible, this lowest fourth should be replaced by students of greater promise.

There is some opinion that the cost of medical education prevents many able students from undertaking it. This may be true. Yet the large proportion of medical students who are wholly or partially self supporting indicates that, at least for many with sufficient ability and determination to secure a medical education, the financial difficulties are not insurmountable. On the other hand, the lack of funds doubtless deters some from undertaking the study of medicine and handicaps others in securing a medical education.

Under the Army and Navy College Training Programs economic considerations are completely removed, both as factors in determining who shall study medicine and as handicaps in medical school to students with limited resources. This represents an important edu-

1. Figures for countries other than the United States from Final Report of the Commission on Medical Education, New York, office of the Director of Study, 1932, p. 99.

cational experiment the results of which should be carefully evaluated. If it appears that as a result of this subsidy appreciable numbers of superior students are enabled to undertake the study of medicine, and if these and other students with limited financial resources receive better medical educations because they are able to devote their time and energies undividedly to their studies, then it would seem in the public interest that more adequate loan or scholarship funds should be made available to aid medical students in the post-war era.

PREMEDICAL EDUCATION

For a number of years before the war practically all medical schools required three or four years of premedical college training as a prerequisite for admission, and 98 per cent of the students admitted to medical schools in 1941 had completed three or more years of college work. The purpose of premedical requirements is to provide medical students with a sound foundation in the sciences on which medicine is based, a familiarity with the social sciences concerned with human relationships, an ability to use the English and at least one foreign language and an acquaintance with other fields which contribute to a liberal education.

In 1825, in answer to objections to establishing the medical school of the University of Virginia at Charlottesville instead of at Richmond, where facilities for clinical instruction were more adequate, Thomas Jefferson indicated that the chief aim of this medical school "at first, was not to give a professional education but simply instruction in a branch of liberal culture which every accomplished gentleman was presumed to have studied."² Most medical educators do not go as far as Thomas Jefferson in this regard but they are anxious that physicians should have a reasonably good general education, meaning thereby "those nonspecialized and nonvocational phases of education that should be the common possession of educated people in a democratic society."³

The reduction of the premedical course to two years of college work has necessitated the elimination of some desirable science courses and most of the opportunities to become acquainted with other fields of knowledge. These opportunities should be restored at the earliest possible moment.

However, consideration of the several groups of students who will be desirous of preparing for the study of medicine immediately after the war would seem to make gradual return to a longer premedical course desirable. Students from high school could well be required to meet normal peacetime requirements. On the other hand, students who have served for some time in the armed forces will be older, anxious to begin their professional studies and impatient of prolonged premedical preparation. For them the curtailed wartime requirements might well be considered acceptable. Students who at the close of the war will have partially completed their premedical requirements under the Army or Navy College Training Programs will constitute an intermediate group.

ACCELERATION

Under the shorter premedical program students start the study of medicine a year or two younger than would otherwise be possible. Many feel that such

students will be lacking in the intellectual maturity, the educational background and the sound judgment so important for the study of medicine. Yet the adding of one or possibly even two or three years to the professional life of most physicians is no small consideration. Thirty-five years ago President Lowell of Harvard wrote "With the long period of special training now required in every profession, there is a universal cry that men are beginning their careers in life too old, and that the period of education is too long. Disease and death are not postponed because a man starts upon the practice of his profession a year or two later than is necessary. His period of active life, his achievements and his usefulness are simply curtailed to that extent."⁴ Over the years discussion of this problem has continued; but instead of a reduction there has been an increase in the age of graduation from medical school.

The possibility of saving time in premedical college preparation has been mentioned. The wisdom of much reduction here seems dubious; but there are definite possibilities of saving valuable years in the elementary and secondary schools. For superior students the lock-step of most elementary and secondary education is not only unnecessary but actually deleterious to initiative and serious scholarship. Furthermore, much of the work of the last two years of high school is repeated during the first year in college. It would seem, therefore, that for many students at least one or two years could be saved by acceleration in the elementary and secondary schools and by telescoping the last year of high school with the first year of college.

The question of immaturity on the part of such accelerated students doubtless has some validity. There is, however, no evidence that the learning capacity of a person is greater from 21 to 25 years of age than it is from 18 to 22, and there is abundant evidence that young people of ability mature rapidly under responsibility and challenging purposeful work.⁵ Sound judgment in medical matters is developed by clinical experience in the wards of hospitals or in medical practice, not by spending unnecessary years in elementary and secondary schools.

The accelerated medical curriculum, with the elimination of summer vacations and the acceptance of new classes at nine month intervals, was adopted for the duration of the war in order to graduate physicians earlier and in larger numbers for service in the armed forces. These demands will taper off with the cessation of hostilities. Therefore, unless there are needs for large numbers of physicians which cannot now be foreseen, most medical schools probably should and will return promptly to the annual admission of new classes. This is necessary if the faculties of medicine are to have time for the scientific and scholarly work which is the foundation of modern medical education.

With an annual admission of students and a reduction in enrolment to prewar levels, the annual number of medical graduates will be reduced and stabilized whether or not the acceleration of the medical course proper is continued.

The chief argument in favor of the continuation of the accelerated program in the medical school is that it permits students to graduate a year earlier than would otherwise be possible, thereby making available to them an extra year for graduate study or for the practice of their profession.

2. Bruce, P. A.: *History of the University of Virginia*, New York, Macmillan Company, 1920, vol. 2, p. 106.

3. McConnell, T. R.: *Liberal Education After the War*, *Ann. Am. Acad. Polit. & Social Sc.* 231: 81 (Jan.) 1944.

4. Lowell, L.: *At War with Academic Tradition in America*, Cambridge, Mass., Harvard University Press, 1924, p. 257.

5. Pressey, S. L.: *Acceleration and the College Student*, *Ann. Am. Acad. Polit. & Social Sc.* 231: 54 (Jan.) 1944.

Against continued acceleration the major arguments are that many students need the summer vacations to earn money toward the expenses of the ensuing year, that some students pursue additional studies during the summer months which contribute materially to their medical education and that the students and faculty need vacations during the summer months.

Probably the first is the most valid of these arguments. Many students utilize the summer months to earn money for their next year's tuition. Yet the amount of money which the average student earns during three summer vacations, approximately \$600 at the University of Minnesota, is small compensation for a year out of his professional life. If adequate loan funds or scholarships could be made available to students who need them it would be preferable, even from an economic point of view, if medical students were able to accelerate their courses of study and graduate in the shortest possible time. Of greater significance is the additional year of service which graduates under the accelerated program can render to society.

The work that some students engage in during summer vacations undoubtedly contributes to their medical education, but the proportion of students who profit professionally by the work done during vacations is too small to provide a strong argument for continuation of the long summer holidays.

The argument that students and faculty members need vacations of three or four months during the summer is open to question. Even under the accelerated curriculum students have four to six weeks of vacation annually, and if classes are admitted only once a year the faculty will have little more teaching under the accelerated program than under the normal curriculum.

THE SUPPORT OF MEDICAL EDUCATION

Financial limitations make it practically impossible for certain medical schools to conduct a truly first class program of medical education. Some of these schools have attempted to increase their budgets by admitting excessive numbers of students. This is truly "selling the birthright" of medical education "for a mess of pottage."

The late President Lotus D. Coffman of the University of Minnesota said that "there are certain things in life for which we pay whether we get them or not." He was referring to general education, but his statement is even more applicable to medical education. If medical education is not adequately supported, the public will receive inferior medical care and will pay for this in terms of unnecessary illnesses and even of life itself.

This public must be made to realize that one of the fundamental requirements for a sound program of medical education is adequate financial support and that less than this is not economy but tragic shortsightedness.

FACULTY RECRUITMENT

The most serious difficulty which medical schools are experiencing in maintaining satisfactory standards of medical instruction during the war is the depletion of their teaching staffs. Every medical school has lost a considerable proportion of its younger faculty members—the group which in most schools carries a large part of the undergraduate teaching. It is from this group also that promotions are made into senior teaching and research positions. Some of these men will return to their former positions after the war; others will be lost at least to medicine forever.

Of equal or possibly even greater concern is the disappearance of the several hundred graduates in each medical class who in normal times would be preparing themselves for careers in medical teaching and research. Multiply this number by the duration of the war and the seriousness of this deficiency is obvious. One of the great foundations has recognized the importance of this "lost generation" to the future of medical science and is planning to aid in the postwar training of a few selected men from this group. This is a splendid example and beginning, but it is essential also that medical schools keep in touch with young men of ability who are interested in academic careers, arrange for their prompt return at the close of the war and then plan to expedite the completion of their training. To fail to do this may well prove to be the most serious permanent loss suffered by medical education from the war.

THE INSTRUCTIONAL PROGRAM

Few changes in the medical curriculum or in instructional methods have been made in connection with the accelerated program. In this medical schools have followed the line of least resistance—a line which is likely to be followed also in making postwar readjustments to a peacetime basis. On the other hand, periods of stress frequently offer opportunities to make changes or adjustments which are difficult in normal times.

In most medical schools the curriculum has become overcrowded and rigid. Yet new developments and even some new fields, such as physical medicine and social medicine, must be included in the instructional program if our graduates are to be prepared to deal with the medical problems of the future. In one of the large clinics of this country 10 per cent of all patients are referred to the division of physical medicine, a field in which few medical schools provide any instruction worthy of the name.

Social medicine has two connotations. One is sometimes called the "social component" of medicine: that is, the social, environmental and economic factors related to the patient's illness or recovery. Increasing attention is being given in medical schools to this field. The other connotation concerns the relationship of the physician and the medical profession to the society which it serves. It is apparent that this society is becoming increasingly interested in the distribution of medical services. To direct this interest to the benefit of all concerned, it is essential that the medical profession understand the issues, the proposals and the plans and exhibit constructive leadership in this field.

These and other subjects we would like to present to our medical students but, unfortunately, there is no time for them in the curriculum. Each professor so thoroughly appreciates the importance of his own subject that he feels that he should have more time, not less, in which to present it.

If the medical curriculum is to be kept in balance with developments in medical science and medical practice, reappraisal of both the curriculum and instructional methods must be made from time to time. Possibly the time given to some subjects should be curtailed and that given to others extended. The postwar period offers a rare opportunity to make such reappraisals and readjustments. May the medical schools have the vision, the courage and the wisdom to take advantage of these opportunities.

DISTRIBUTION OF MEDICAL CARE

A POSTGRADUATE PROGRAM TO FIT A PATTERN
OF MEDICAL PRACTICE

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Medical schools have come more and more to accept the responsibility for the continued education of their graduates through postgraduate programs. Such postgraduate programs have been generally helpful. They can, however, be considerably more helpful; they can, in fact, serve as a major factor in the solution of the great problems involved in the distribution of good medical care, problems which are at present under urgent discussion.

Essentially the total medical problem consists of (1) the maintenance of high standards of undergraduate medical education, (2) the satisfactory distribution of medical care and (3) the purchasability of this medical care by the public. The problem of the maintenance of high standards of undergraduate medical education in this country is being attacked in an impressive manner by the medical schools. The second problem, that of distribution, is a complex one. It involves (a) the continued education of the practicing physician, (b) the establishment of channels for the quick dissemination of new advances in medical care, both of a technical and of a clinical nature, and (c) the creation of physical facilities for the management of the sick or potentially sick patient. Only this last phase of the problem of distribution, namely the creation of physical facilities, is basically economic.

There remains the final phase of the problem, that of making purchasable good medical care. The problem of the purchasability of medical care is purely economic and must in some way sooner or later be met to the extent that every person can obtain at least the minimum essential medical care. This is not the place for a discussion of the merits of the various methods of financing medical care in this country. If one proceeds on the assumption that some method of financing has been established, that the economic problem has been solved, we are faced then with the problems of the quality of medical care and its distribution. Quality and distribution are placed together because it has been demonstrated that they are interrelated and can be satisfactorily encompassed in a broad postgraduate educational program such as has been set up at the Tufts Medical School through the Bingham Associates Fund. This program is, briefly, a plan to extend medical benefits to small communities through a series of postgraduate activities. The New England Medical Center, and more particularly the Joseph H. Pratt Diagnostic Hospital, serves with the Tufts Medical School as the central base for the development of the program, which is a coordinated effort toward making better medical care available to more people of New England. The program functions through the medical school and affiliated hospitals of various sizes and in widely scattered communities. There are small community hospitals in twenty-four towns in Maine, larger hospitals in regional centers in Lewiston and Bangor and the medical school and hospital center in Boston. The work is divided into three main divisions: (1) clinical diagnostic aid, (2) postgraduate medical courses and (3) hospital extension services. In offering clinical diag-

nostic aid the base hospital serves as a complement to and not as a substitute for the affiliated hospitals. It becomes a clearing house for such problems as the affiliated hospitals may wish to refer. The organization for clinical affiliations is discussed later. The postgraduate medical courses aim to improve the capabilities of the physicians who supply medical care in the various communities. These postgraduate courses are of the extramural as well as of the intramural type. The hospital extension services are designed to improve the hospital facilities in small communities. These small community hospitals are affiliated with larger hospitals in the regional centers. The regional centers are in turn directly affiliated with the medical school center in Boston. It is intended that the small communities maintain full opportunities for independent work but that this work be integrated with that of the metropolitan and regional centers in such a manner that there may be established regular and directed channels for the quick dissemination of medical developments from the large medical centers to the smaller communities. In these hospital extension services are included pathology, laboratory aid, electrocardiography, radiology, dietetics and library assistance.

If the health of the citizens is properly the concern of the government, the government's first duty should be to make possible the purchasability of what is at present offered in medical care. Such a program as is here outlined might contribute to the solving of many of the remaining problems of good medical care and its distribution. As a matter of fact it is possible that, with the creation of sufficient purchasing power through a satisfactory economic program, the problems of distribution and availability would more or less solve themselves through the stimulating influence of this purchasing power. The successful development of "prepaid medical clinics" has demonstrated essentially that point, namely that, as money circulates freely, facilities are created. When one considers the tremendous forward strides which American medicine has taken, particularly in scientific and educational achievements, despite inadequate and uneven financial support, it is not too much to anticipate that when there is an adequate and even source of income the problems associated with the distribution of these scientific advances will also be successfully met. It is these scientific advances of medicine which have created the problem of distribution. A hundred years ago the medical care obtainable by the rich and fortunately located was not much better than that available to the poor and isolated, largely because there was at that time but little difference between what was considered good medical care and no medical care. As medicine advanced this difference became increasingly great, so that there arose the problem with which we are now faced: namely, that of bringing the improved medical care to more and more people through an economic program which makes this care purchasable and through a program of distribution which makes it available.

It may be argued that only an insurance program of national scope and under government control can make it possible for the lay public to afford and hence demand the best medical care. There is no justification, however, for assuming that the noneconomic aspects of the whole problem require government supervision. There is no reason to believe that voluntary medical centers cannot satisfactorily manage these aspects. You can legislate an insurance program which will make it possible for every one to purchase medical care. You

can even legislate professional and hospital standards. But you cannot legislate the discovery of insulin or a method for estimating the level of phosphatase in the blood or countless other advances. Such advances are stimulated by certain influences which have operated in a free scientific atmosphere and which may or may not operate in a rigidly controlled government atmosphere. The medical school has been largely responsible for the advances and the present high standards of medicine in this country. The medical school, in addition to creating standards and stimulating scientific advances, may also see to it that such advances are continually distributed to the people for whom they are ultimately intended. A more extensive postgraduate program can achieve such a goal. For this purpose the medical school must have full clinical facilities. Where medical schools are not available, teaching hospitals should be utilized.

Essentially the problem of supplying clinical facilities to a given region, as we view it, involves the setting up of a number of hospitals over wide areas whose total function will be that of a single coordinated and balanced institution. It is the horizontal instead of the vertical development of hospitals. It is decentralization with coordination rather than centralization with subordination.

As to the medical center hospital itself, it should serve as a source of specialized aid which would not otherwise be satisfactorily available to the affiliated communities. It should not be concerned with simply providing another building with more beds for patients with pneumonia or heart failure, or for those who require appendectomies, herniotomies and so forth. In other words, it should not be simply another hospital. The mass of work should be done locally by community hospitals, more advanced work should be done in regional centers, and only the final filtered cases should be handled in the medical center. The present tendency of centralizing more and more work in larger and larger institutions will ultimately become uneconomical from the medical point of view and certainly undesirable from the patient's point of view, particularly when the patient must come from a distant community. A scattered group of hospitals, working independently but in a coordinated manner, could be far more effective in handling, let us say, 3 to 4 thousand patients spread throughout small communities in New England than one hospital in Boston ever could. The purpose of the New England Medical Center is not to care for a cross section of medical population but to set up a cross section of hospitals to care for this population. The alternative of one large, ever expanding central hospital to look after everybody would create a situation comparable to that in which all legal problems, for example, might have direct access to the Supreme Court. Just as it is desirable to have a series of progressive courts, all of equally high standards, to handle progressively complex legal problems, so it is desirable to have a series of progressive hospital units to care for increasingly complex medical problems.

The medical center should develop on the principle of continually decentralizing certain functions to units which are being made increasingly adequate; and it should allocate to itself only those functions which it alone can best handle. It would be expected that new operations, new techniques and other new developments would gradually be handed down and established in the smaller units as these advances became widely acceptable. The purpose of the central unit is not to serve

primarily as a point to which patients can be referred for help. The purpose is continually to improve the facilities in the various affiliated communities to such an extent that fewer and fewer problems will need to be referred. As long as there is continuing medical progress there will be opportunity for the central unit to pass on such progress through the organization.

There is no intention to minimize the importance of large general hospitals. In metropolitan areas such hospitals are necessary if for no other reason than to care for the large local medical population. The type of organization of hospitals which I am describing is intended rather to supplement existing hospital activities in metropolitan areas for the purpose of creating better opportunities for smaller communities to keep up with the progress of medicine. This is essentially a new function for a metropolitan or teaching hospital.

One can conceive of a situation ultimately in which the various hospitals through to the smallest communities will be so intimately connected with the medical school center through a comprehensive postgraduate program that there will be very little difference between the quality of work done in the smallest unit and that in the center. When this time comes undergraduate students will be doing their clinical work in communities all along the line, graduate students will be taking their hospital internships in all the communities concerned, postgraduate instruction will be disseminated throughout, hospital extension services will make uniform the quality of the ancillary medical services (pathology, nursing, laboratory, x-ray and so on) and clinical units will be coordinated in such a way as to serve essentially as a large single clinical organization scattered over widely separated areas.

An institutional organization such as is pictured in the Tufts program points up the problem of professional organization for medical care. The program may seem among other things to be encouraging group or institutional practice on a larger and more widespread scale.

To the general practitioner the unusual will always remain unusual; to the specialist in an institution it can become usual. For example, 3 patients arrive from small communities with easily diagnosable undulant fever, multiple sclerosis and myxedema respectively. To the referring family doctors these are rare conditions. To specialists in an institution they may be relatively common.

Is the general practitioner, then, to be relegated to managing minor ailments and serving as a way station for the referring of all other illnesses? Not at all. The patients in most cases need be referred to institutions only for consultation and recommendations. Practically all nonsurgical illnesses, from the therapeutic point of view, can be divided into three classes: (1) the self limited, (2) the fairly easily manageable and (3) the incurable. Once the diagnosis has been established, most of these illnesses can be handled by the general practitioner as well as by the trained specialist in the best equipped medical center. The only cases which the general practitioner cannot handle are those which require certain difficult therapeutic procedures which only a group of specialists can provide. Included, of course, are special surgical procedures which will always have to be performed in some center if they are to be done well.

The general practitioner is then in a position to take care of his practice entirely satisfactorily if he can obtain a consultation and recommendations from some

central institution and if he is enabled to refer to such an institution those few patients requiring special surgical or, more rarely, special medical treatment which cannot be provided locally. In fact, if a general practitioner or family doctor can become actively affiliated with a group of hospitals such as a medical school post-graduate program like the Tufts program could provide, he may function with complete satisfaction to his patient.

A pattern for future practice then begins to emerge. It will not be a struggle between the specialists practicing in a group and the general practitioner practicing as an individual for control of medical practice with the prospect that ultimately one or the other will disappear. Rather it will be the better coordination of the best features of the two. This is the ideal for which to strive. The health of our people will be worse if it is left entirely to specialists, just as it has not been sufficiently good because in the past it was left almost entirely in the hands of the general practitioner. The two groups can be strengthened and each made more effective by the proper combination of their separate talents.

It is axiomatic that new movements tend to go to extremes. Specialization because of obvious advantages is likely to be looked on as the answer to the problems of medical care. Some attempts at such an answer have been made by the concentration of specialists in groups, as in the Mayo Clinic and the Lahey Clinic, for example. The success of such clinics only emphasizes that there is necessity for specialized aid. This success must not be taken to mean that we have discovered the answer to medical care. It would be as reasonable to assume that because of the great advantages of air and motor transportation walking will no longer be necessary. The basis of all transport will still be old fashioned walking. It is a great help, however, to be able to employ speedy transportation when necessary. The combination of the power to walk plus the power to fly, each in its place, is clearly more satisfactory than either power alone.

Here is one of the fundamental differences between the type of development for which the Joseph H. Pratt Diagnostic Hospital is striving and that of other present day clinics. The Pratt aims to complement the family doctor, whereas other clinics tend to supplant him. Something as impersonal as a clinic will never be able satisfactorily to look after an individual patient as a human being. Those who have had some experience with medical induction boards recognize them as fine examples of highly organized mass study; the assembly line applied to the medical field. For a certain type of medical work this sort of superefficiency is unsurpassed. However, for coordinating the problems of an individual patient and looking after that patient such a system is inadequate. So much time is required for the proper complete care of an individual patient that one institution cannot possibly have on its staff enough physicians to handle satisfactorily all the patients; hence it becomes extremely advantageous to farm patients out, as it were, to what might be called men in the field, or the general practitioners. In the war on illness it is largely they who in the final analysis do the actual fighting after receiving proper instruction.

On an "assembly line" the trained physician can decide in ten seconds that a patient has rheumatic heart disease with mitral stenosis. Some one must spend many hours over the succeeding years explaining the significance of this diagnosis and arranging a program of life as well as supervising general health measures.

The diagnosis can be made in an institution; the subsequent care should be handled by a family doctor.

The sick patient should first consult his family doctor. This doctor should be sufficiently well informed to decide whether he needs technical or clinical help. The facilities for such help must be made available to the family doctor, to whom the patient should ultimately return for continued care. In most instances the general practitioner can handle the patient's complaint without much ado. The general practitioner and not the patient should decide when the expensive facilities of clinics and hospitals should be utilized. If the patient has either private or insurance funds so that the general practitioner need not hesitate to ask for whatever technical or clinical help is necessary, then the situation becomes even more satisfactory.

The argument is not group medicine versus the family doctor but rather group medicine plus the family doctor versus group medicine or the family doctor. It would be difficult to prove that the ailing patient who has a well informed family doctor with ready access to the benefits of medical advances is not in the long run better off than the patient who is tagged through an impressive institution and then of necessity left more or less to his own devices.

The majority of all illnesses are easily diagnosed by the well informed and well trained physician without special equipment, and most of the patients thus diagnosed can be satisfactorily handled without access to special facilities. A person who is thus found to have migraine or flat feet or impetigo does not need a group of specialists or a well equipped institution. Or the patient may have a common cold and just have to stay in bed at home for a day or so. It would be unfortunate if the elaborate facilities of a large institution had to be called on under such circumstances. The human body is still subject to simple illnesses even as the soul is still sensitive to simple pleasures. Why clutter up institutions with such patients? And can they not be more satisfactorily handled by a family doctor in his office or in the patients' homes? Why not use institutions and groups of specialists as the adjuncts which they are and not as the totalities which many regard them to be?

The problem, then, is to educate the doctor so that he will be informed of the modern advances of medicine, to keep him informed of the continuing advances, to give him free access to facilities for employing these advances, and finally to make it possible for the sick or potentially sick patient to purchase what the family doctor, thus made fully adequate, can supply. Every phase of the problem is equally indispensable.

A final point:

A widespread academic and clinical organization such as is envisaged in the Tufts program can demand of its affiliated family doctors, as well as of its institutional staffs, not only the highest scientific standards, but such ethical standards as to assure the practice of medicine on its traditional high plane.

SUMMARY

It is indicated that a sufficiently comprehensive post-graduate medical program can encompass most of the noneconomic aspects of the problem of the distribution of good medical care. Such a plan is being developed at Tufts through the Bingham Associates Fund. The program functions through clinical hospital affiliations, hospital extension services and post-graduate courses. Within the framework of these broad groupings there

exist many opportunities for further extensive development and experimentation. The clinical organization involves the setting up of a number of hospitals over widely separated areas whose total function is that of a single coordinated and balanced institution. Medical institutions and groups of specialists are viewed as adjuncts to the general practitioner, who is thus placed in a role of major importance. It is believed that the sick or potentially sick patient can best be cared for as an individual under such an arrangement.

30 Bennet Street.

DISTRIBUTION OF NEGRO PHYSICIANS IN THE UNITED STATES IN 1942

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The distribution of Negro physicians in the United States has not been the subject of study since 1932, when Lewis,¹ using the directory of the American Medical Association and through questionnaires to various medical schools, investigated this subject. During the early part of 1942 the opportunity for such study presented itself again. Col. Campbell C. Johnson, executive assistant to the director of the Selective Service System, was desirous of obtaining information concerning the present distribution of Negro physicians in the United States for use in connection with certain specific problems arising in the Selective Service System. As a member of the National Medical Advisory Board of this agency, I was asked to develop a plan whereby this information could be obtained. The following procedure was suggested and subsequently used:

1. The mailing list of the National Medical Association, a national organization of Negro physicians, was first obtained and checked with various lists available from medical schools, voluntary health organizations and the Julius Rosenwald Fund.

2. After this had been completed, a list of Negro physicians was compiled for each state and sent either to the president of the component state medical society of this association or to a prominent Negro physician in the state, who was asked to check the list for completeness, taking into consideration the deaths, the recent additions and those who had left the community to practice elsewhere. The cooperation from this group was excellent. In all instances except one the lists were returned promptly and properly corrected.

3. In view of the possibility of many inaccuracies in such an approach, a request was made of the Procurement and Assignment Service to furnish, if possible, a list of Negro physicians who had filled the questionnaire sent by them to all physicians during the latter part of 1941 and the early months of 1942. This agency, as soon as it had completed its analysis, sent this information.

4. Then the two lists, namely the corrected one from the various states and that of the Procurement and Assignment Service, were checked against each other, name by name, and in this manner it was possible to obtain a final composite list which for all intents and purposes included the names of practically all Negro

physicians practicing in the United States as of 1942, the year during which the major part of these investigations was done. The checking of these lists was facilitated by the fact that, in addition to the names, the street address for each physician was available.

5. After this complete list had been obtained, the material was analyzed in terms of the distribution of Negro physicians according to the Negro population in the various regions, states and cities in the United States.

It is believed that, although there may be a few inaccuracies, this analysis represents the normal distribution of Negro physicians for the year 1942 because very few Negro physicians had been inducted into the armed forces during the latter part of 1941 and the early portion of 1942. Most of the Negro medical men who are now in the Army have been called since the latter part of 1942. Furthermore, most of those who have been called have come from the northern area, leaving the distribution in the South fairly stable. Even so, up to Nov. 8, 1943, according to a release from the Bureau of Public Relations of the War Department,² only 395 Negro physicians, or a little better than 10 per cent of all Negro physicians, were serving in the United States Army. Thus the impact of the war has not caused the tremendous dislocation in the body of Negro physicians which it has had on the mass of their white colleagues.

DISTRIBUTION OF NEGRO PHYSICIANS ACCORDING TO THE MAJOR SUBDIVISIONS OF THE UNITED STATES

It is rather fortunate for comparative purposes that the Lewis study, already mentioned, and data published by the American Medical Association³ also for 1932 are available, so that it is possible to evaluate what has happened to the distribution of Negro physicians during the decade 1932 to 1942. According to our analysis, in 1942 there were 3,810 Negro physicians serving a Negro population of almost 13 million Negroes, based on the 1940 census. Whereas the Negro population increased about 8 per cent during 1930 to 1940, the number of Negro physicians decreased from 3,985 in 1932 to 3,810 in 1942, or about 5 per cent. Such a decrease has not been noted for the number of physicians as a whole; rather there has been a very definite increase. According to the American Medical Association, in 1931⁴ there was a total number of 156,339 physicians as compared to 176,191 in 1942,⁵ showing an increase of 12.1 per cent and thus comparing favorably with an increase in the total population of 7.2 per cent during 1930-1940.

The decrease in the number of Negro physicians during this decade may be explained solely on the basis of what took place in the field of medical education for Negroes in this same period. Figures obtained from the various educational numbers of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and presented in table 2 for 1928 through 1938 (the last year for which data concerning Negro students is available) show that up to 1935 approximately 100 Negro physicians were graduated yearly, but after that year the figures gradually decreased until by 1938 only 61 Negroes were graduated from all medical schools. On the basis of figures obtained for subsequent years since 1938 from Howard University and Meharry medical

2. Gibson, T. K., Acting Civilian Aide to the Secretary of War: author. in the United States, Bureau of Medical Medical Association Press, 1936.

5. Report of Committee on Medical Preparedness of the American Medical Association, J. A. M. A. 119: 651 (June 20) 1942.

Miss Doris O. Christmas, secretary to Col. Campbell C. Johnson, and Miss Norma Pinkney, graduate student in social work, gave valuable aid in this investigation.

1. Lewis, J. H.: Number and Geographic Location of Negro Physicians in the United States, J. A. M. A. 104: 1272 (April 6) 1935.

schools, which educate the bulk of Negro physicians, this annual number presumably has remained about the same and this will be changed only when the classes graduated under the accelerated program begin to make their appearance in 1943. On the basis of estimates of the American Medical Association it can be stated that from 2 to 2.5 per cent of physicians will die yearly. If this applies with equal force to the Negro, then from 80 to 100 colored physicians die yearly and therefore up to 1935 Negro physicians graduated in numbers which exceeded by slight margin those dying. However, since that year the number has been insufficient for replacements and thus the total number of Negro physicians had gradually declined. Parenthetically, it may be stated that the figure 3,810 must have a substantially high degree of accuracy, since an estimate made purely on the basis of the estimated number of Negro physicians dying and the number graduating yearly during 1932 and 1942 results in a figure of 3,860, which is quite a close approximation to the actual figure.

Referring to table 1 again, it is noted that decreases were general throughout all areas of the United States with the exception of two divisions in the North, namely the Middle Atlantic, where there was an increase of almost 30 per cent, thereby exceeding the population increase of 20.5 per cent, and the West North Central, where the figures were approximately 10 and 6 per cent respectively. Thus the North as a whole shows an increase of 7.5 per cent in the number of Negro physicians as compared to decreases of 12.1 per cent and 14.8 per cent respectively for the South and the West. The explanation for this is, of course, obvious. Negro physicians, like all physicians, have had a tendency to locate in the large urban centers of the North, and this was even more true during the depression years. It must be kept in mind however that, even though there

The number of Negro physicians in this region decreased from 525 to 393, or approximately 25 per cent.

There is at present in the United States 1 Negro physician for every 3,377 Negro individuals. This is approximately 4.5 times the proportion existing in the United States as a whole, where we have 176,191 physicians serving approximately 132,000,000 persons, or a ratio of 1 to 750. Even when the ratio of 1 physi-

TABLE 2.—Number of Negro Students and Graduates from Medical Schools in the United States, 1928-1938 *

	1928	1931	1932	1933	1934	1935	1936	1937	1938
Number of graduates....	120	114	122	91	100	104	73	84	61
Number enrolled.....	510	497	479	428	424	402	369	372	372

* Taken from Educational Numbers of THE JOURNAL for the year listed.

cian to 1,500 individuals,⁶ which has been suggested as the wartime minimum for civilian safety, is accepted, the situation in the Negro population is at a serious disadvantage. This is even more striking when the various regions are considered. The South, with over 75 per cent of the Negro population, has the most unfavorable ratio with 1 Negro physician for every 4,913 colored persons, and in this area the West South Central subdivision reaches the lowest level, with 6,171 Negroes for each physician of this racial category. On the other hand, the most favorable position obtains in the West and East North Central areas with respective ratios of 1 to 1,151 and 1 to 1,517. It is indeed striking to note that in these two areas with 1,420,318 Negroes there are 1,010 physicians serving them, while in the whole Southern area with 9,904,619, or seven times this population, there are only 2,018 Negro physicians, or twice the number in the West and East North Central areas combined. Another disadvantageous comparison is seen between the West North Central and West South Central areas. In the former there are 350,992 Negroes with 305 Negro physicians, while in the latter there are seven times as many Negroes with only 88 or 29 per cent additional doctors.

DISTRIBUTION OF NEGRO PHYSICIANS ACCORDING TO STATES

The conditions existing in the various states reflects in an individual fashion what has already been noted for regions and larger subdivisions. The statement of a recent writer well depicts what has occurred among Negro physicians in these communities. "The trend," said he, "during the past twenty years has been for the states rich in physicians to become richer and the poor poorer, largely because of the preference of new graduates for location in the medically wealthy states." Even though there has been a decrease in the total number of Negro physicians in the United States, an examination of table 3 adequately confirms this statement. In the twenty-one states located in the North with favorable ratios, all but five show either no change or a definite increase in the number of physicians during the period 1932-1942, and in most of these instances the increase was out of proportion to the increase in population. The increase varied from 5.7 per cent in Kansas to 48.6 per cent in New York. On the other hand, in the seventeen Southern states all but three showed decreases ranging from 1.1 per cent for Virginia

TABLE 1.—Distribution of Negro Physicians and Population and Population per Physician According to Major Geographic Divisions

Division and State	Negro Population 1940 Census	Number of Negro Physicians		Percentage Increase or Decrease		Population per Physician 1942
		1942	1932 *	1930 1940	1932 1942	
United States.....	12,867,518	3,810	3,985	8.2	-4.6	3,377
Regions:						
North.....	2,790,193	1,700	1,582	15.8	7.5	1,641
South.....	9,904,619	2,018	2,295	5.8	-12.1	4,913
West.....	170,706	92	108	41.8	-14.8	1,859
North:						
New England.....	101,566	55	69	7.9	-20.3	1,846
Middle Atlantic.....	1,268,206	635	489	20.5	29.8	1,937
East North Central.....	1,069,326	705	746	14.9	-5.5	1,517
West North Central.....	330,992	305	278	5.8	9.7	1,151
South:						
South Atlantic.....	4,698,863	1,087	1,144	6.3	-5.2	4,321
East South Central.....	2,780,635	538	626	4.6	-14.1	5,168
West South Central.....	2,425,121	393	525	0.3	-25.1	6,171
West:						
Mountain.....	36,411	16	27	20.5	-33.3	2,021
Pacific.....	114,295	74	81	49.0	-8.6	1,815

* Taken from Distribution of Physicians in the United States.⁷

was an increase in the number of physicians in the North, this was only apparent, since the population percentage increase in this area during 1930-1940 was double that of the physicians. Another point which should be emphasized is the fact that the most significant decrease occurred in the West South Central area, a section which contains one fifth of the Negro population and therefore one least able to afford it.

6. Hearings Before a Subcommittee (Peterson Committee) of the Committee on Education and Labor of the United States Senate, Seventy-third Congress, Second Session, on S. Res. 24, Washington, D. C., Government Printing Office, 1943, pp. 2, 16, 62.
7. Perret, G. St. J., and Davis, B. M., *The Negro Physician in the United States*, P. H. R. 255, 1942 (U. S. Gov. Print. Off.).

to 45.8 per cent for Arkansas. In the three states which did not show decreases, namely Maryland, North Carolina and Alabama, the first two have stood high among the Southern states when per capita income was considered, while the favorable position of Alabama is due to the location therein of a large Negro Veteran Administration Facility, which attracts a number of Negro physicians.

TABLE 3.—Distribution of Negro Physicians and Population and the Population per Physician According to States Under Various Major Divisions

States	Negro Population 1940 Census	Number of Negro Physicians		Percentage Increase or Decrease		Population per Physician 1942
		1942	1932	Negro Population 1930-1940	Negro Physicians 1932-1942	
New England						
Maine.....	1,391	0	1	19.0	100.0	.....
New Hampshire.....	111	0	0	-47.6	0.0	.....
Vermont.....	384	0	0	-32.4	0.0	.....
Massachusetts.....	55,391	31	47	5.8	-31.0	1,787
Rhode Island.....	11,924	6	5	11.2	20.0	1,837
Connecticut.....	32,992	18	16	12.1	12.5	1,832
Middle Atlantic						
New York.....	571,221	269	181	38.4	48.6	2,133
New Jersey.....	226,973	146	139	8.7	5.0	1,555
Pennsylvania.....	170,172	220	169	9.0	39.2	2,137
East North Central						
Ohio.....	3,09,461	152	208	9.7	-12.5	1,965
Indiana.....	121,946	70	79	8.9	-11.4	1,712
Illinois.....	3,87,446	311	332	17.8	-6.3	1,246
Michigan.....	2,08,345	131	117	23.0	11.9	1,730
Wisconsin.....	12,158	11	10	13.2	10.0	1,165
West North Central						
Minnesota.....	9,928	3	3	5.1	0.0	3,309
Iowa.....	16,694	13	12	-3.9	8.3	1,284
Missouri.....	211,356	214	216	9.2	12.9	1,692
North Dakota.....	201	0	0	-46.7	.....	.....
South Dakota.....	174	0	0	-26.6	.....	.....
Nebraska.....	11,171	8	12	3.0	-33.3	1,771
Kansas.....	65,138	37	35	-1.8	5.7	1,769
South Atlantic						
Delaware.....	15,876	0	10	10.0	10.0	3,686
Maryland.....	391,941	117	111	9.2	5.4	2,581
Dist. of Columbia.....	187,292	252	271	41.8	-7.0	743
Virginia.....	631,449	183	185	1.7	-1.1	3,614
West Virginia.....	117,751	52	63	2.5	-17.5	2,265
North Carolina.....	981,298	170	117	6.8	45.3	6,772
South Carolina.....	814,164	67	83	2.6	-19.3	12,152
Georgia.....	1,081,927	152	195	1.3	-22.1	7,134
Florida.....	514,198	85	109	19.1	-22.0	6,049
East South Central						
Kentucky.....	214,631	109	131	-5.3	-16.8	1,964
Tennessee.....	508,736	216	308	6.5	-20.1	2,098
Alabama.....	983,290	125	116	1.1	7.8	7,866
Mississippi.....	1,071,578	58	71	6.1	-18.3	18,527
West South Central						
Arkansas.....	482,578	58	107	0.9	-45.8	8,320
Louisiana.....	819,393	98	116	9.1	-15.5	8,666
Oklahoma.....	168,849	71	87	-1.9	-18.4	2,378
Texas.....	924,391	166	215	8.1	-22.8	5,569
Mountain						
Montana.....	1,120	0	1	-10.8	100.0	.....
Idaho.....	595	0	0	-10.9	0.0	.....
Wyoming.....	956	0	0	-23.5	0.0	.....
Colorado.....	12,176	10	16	2.9	-37.5	1,218
New Mexico.....	1,672	3	3	63.9	0.0	1,557
Arizona.....	11,993	5	7	39.5	-28.6	2,999
Utah.....	1,235	0	0	11.5	0.0	.....
Nevada.....	661	0	0	28.7	0.0	.....
Pacific						
Washington.....	7,421	5	1	8.5	25.0	1,485
Oregon.....	2,535	1	2	11.8	-50.0	2,665
California.....	124,306	68	75	53.1	-9.3	1,828

The population per physician ratio in the various states again presents the same pattern, considering only the states and excluding the District of Columbia. All the Northern states have a population ratio which is better than the national average. These range from 1 Negro physician to 1,002 Negroes in Missouri to 1 to 3,309 in Minnesota. If we accept the ratio of 1 to 2,000 as a rather favorable one, thirteen of the twenty-one in this group fall in this category. As a matter of fact,

all the states except one, namely Minnesota, which has a rather small Negro population, have a ratio of better than 1 to 2,200 individuals. The Southern states, with the bulk of Negro population, show a situation of much concern to the public health of this group. Of the seventeen states, only five had ratios better than the national figure, but none reached a level below 1 to 2,000. The proportion in these states varied from 1 to 2,068 in Tennessee to 1 to 18,527 in the state of Mississippi, where almost one tenth of the Negro population of the United States resides. The six states with the most unfavorable ratios may be listed as follows: Mississippi 1 to 18,527, South Carolina 1 to 12,152, Louisiana 1 to 8,666, Arkansas 1 to 8,320, Alabama 1 to 7,866 and Georgia 1 to 7,134. According to Lewis in 1932, this disfavored group was made up of the states of Mississippi, South Carolina, North Carolina, Alabama, Louisiana and Georgia. Thus it is seen that during the ten year period only North Carolina has been able to escape from this group, to be superseded, however, by Arkansas.

The state of Mississippi, it is thus seen, has stood in an unfavorable light for a number of years, and its situation appears to grow worse. The Council on Medical Education and Hospitals,⁸ in a study made in 1938 of the hospital and medical care in Mississippi, showed that the total number of all physicians has shown an almost continuous decline since 1904, so that in 1938 there was 1 physician to 1,353 persons. Thus the condition among Negroes is only a graver reflection of that for the state as a whole. Of the eighty-two counties, fifty-six had no Negro physicians and seventeen of these had populations of 10,000 or more Negroes. The extreme example according to the report was Sunflower County, where there were 46,646 Negroes with only 1 Negro physician. The present situation among Negroes in Mississippi may be explained in part by the fact that the per capita income of this state is among the lowest in the Union and because the opportunities for professional growth and advancement are lacking. For instance, the hospitals in Mississippi which admit Negroes number five with only 112 beds. Such conditions would certainly fail to attract recent young Negro graduates.

DISTRIBUTION OF NEGRO PHYSICIANS ACCORDING TO CITIES

The concentration of physicians as a whole in large cities is a phenomenon which has been noted in this country for many years, and this is reflected in the Negro physician group as shown in table 4. This is seen from two points of view. First, when the percentage which each city's Negro population is to the total Negro population of the state is compared to the percentage which the number of Negro physicians in that city is to the total of the whole state, it is noted that in all instances but four, North and South, the figure for the latter is higher. The difference between the percentage of concentration of population and that of physicians ranges from 1.3 to 37.6. New Orleans shows the greatest disparity, for although it has only 17.5 per cent of the Negro population of the state it contains 55.1 per cent of the Negro physicians. In the four states which do not show this relationship

8. Hospital and Medical Care in Mississippi, Report of the Council on Medical Education and Hospitals, J. A. M. A. 112: 2317 (June 3) 1939.

the differences, however, are small, ranging as follows: Memphis 3 per cent, Cleveland 1.4 per cent, Cincinnati 2.7 per cent and Indianapolis 6.2 per cent. A second expression of this concentration is seen in the fact that for the first time in this analysis it is noted that there are not the great differences between the ratios of the North and South, as shown by the fact that the average for the ten Southern cities was 1 physician to 1,862 persons as compared to 1 to 1,464 for the ten Northern cities. In only three Southern cities, namely Birmingham, Ala., Houston, Texas, and Jacksonville, Fla., were the ratios higher than the national average of 1 to 3,377.

When all cities are compared irrespective of regions, it is noted that the greatest concentration of Negro physicians is to be found in Washington, D. C., and St. Louis, where the proportions of 1 to 743 and 1 to 766 persons respectively are equal to the oft quoted national ratio of 1 to 750 for all physicians in the United States. Such decided concentrations may be explained

TABLE 4.—*Distribution of Negro Physicians and Population and the Population per Physician in Cities with 50,000 or More Negroes*

City	Negro Population 1910 Census	Percentage of Total Negro Population of State	No. of Negro Physicians 1942	Percentage of Total Physicians in the State	Population per Physician
Atlanta, Ga.....	104,533	9.6	43	28.3	2,431
Baltimore.....	165,843	54.9	83	70.9	1,998
Birmingham, Ala....	108,938	11.1	19	15.2	5,734
Chicago.....	277,731	71.7	264	84.9	1,052
Cincinnati.....	55,593	16.4	25	13.7	2,224
Cleveland.....	84,504	29.4	51	28.0	1,657
Dallas, Texas.....	50,407	5.4	19	11.4	2,653
Detroit.....	149,119	71.6	97	74.0	1,537
Houston, Texas.....	86,302	9.3	21	12.7	4,110
Indianapolis.....	51,142	41.9	25	35.7	2,046
Jacksonville, Fla....	61,782	12.0	17	20.0	3,634
Los Angeles.....	63,774	51.3	50	73.5	1,276
Memphis, Tenn.....	121,498	23.0	58	23.6	2,095
New Orleans.....	149,034	17.5	54	55.1	2,760
New York.....	458,444	80.2	250	92.9	1,824
Philadelphia.....	250,880	53.4	131	69.5	1,915
Pittsburgh.....	62,216	13.2	32	14.5	1,914
Richmond, Va.....	61,251	9.3	23	12.6	2,663
St. Louis.....	108,765	44.5	142	68.2	766
Washington, D. C....	187,266	....	252	....	743
Totals					
10 Southern cities	1,006,534		580		1,862
10 Northern cities	1,562,165		1,067		1,464

by the fact that in addition to offering good economic opportunities these two cities have two important Negro medical centers which combine to attract many recent graduates. In Washington, Howard University Medical School, which graduates close to 50 per cent of the Negro physicians in this country, and Freedmen's Hospital, with over 500 beds, are to be found, while in St. Louis the second largest of all Negro hospitals, Homer G. Phillips', a municipal institution with over 700 beds, is located. As a matter of fact, the opportunity for professional advances found in the availability of hospitals explains to a large extent the greater concentration of Negro physicians in Northern as compared to Southern cities. The lowest ratio of physicians on the other hand are to be found in the two Southern cities of Birmingham, Ala., and Houston, Texas, where the proportion of 1 to 5,734 and 1 to 4,110 respectively prevail.

Little has been said about the distribution of physicians in the Mountain and Pacific states and cities. The reason for this is obvious. According to the 1940 census there were only 170,706 Negroes in the West, and

almost 75 per cent of these lived in California. Thus throughout the other ten states comprising this area Negro population groups are small and not particularly significant. However, a word or two should be said about California. During the decade 1930-1940 this state showed a rise of 53.4 per cent in its Negro population, but the number of Negro physicians showed a decrease of 9.3 per cent. However, because in 1932 it stood fourth among the states with a ratio of 1 physician to 1,081 it continued to maintain a better than average ratio in 1942 with 1 Negro physician for every 1,828 Negroes. The bulk of Negro physicians is centered, as would be expected, in Los Angeles. Fifty of the 68 physicians are located in this city, thus giving a ratio of 1 to 1,275 persons and placing it fourth among the twenty cities with populations of 50,000 or more Negroes.

COMMENT

It is seen from this analysis that the availability of Negro physicians to serve the Negro population is not sufficient to render minimum adequate medical care. This was true during 1942 before the impact of the war was felt and therefore is of particular concern during the war period and will be of even greater importance when the war has ceased and various plans to give more adequate medical care for all people are being considered.

Let us then discuss certain aspects which have a bearing on this problem. At a meeting held Feb. 17, 1943, which consisted of representatives of the Army, Navy, National Medical Association, National Selective Service System and Procurement and Assignment, the following principles were agreed on because of the inadequate ratio of Negro physicians to population in the United States, and particularly in the South:

1. That only a total of 500 Negro physicians would be called for Army services, so that medical care to the civilian population would not be too greatly disrupted.

2. That this number would be called by the end of 1943 and would be taken primarily from the large cities of the North, where there was a greater degree of concentration of Negro physicians.

3. That after 1943 there would be needed a replacement number of from 40 to 50 physicians yearly for the armed services and that these would be taken solely from the group of physicians who were just finishing or about to finish their internships.

From this it is seen that two or three results will eventuate: First, at the end of 1943 the total number of Negro physicians will have been reduced to approximately 3,500, taking into consideration those graduating in 1942 and 1943. Secondly, according to Lawlah,⁹ with the accelerated program and increased enrolment in the two Negro medical schools approximately 530 medical students will graduate every three years; but during that period, if the war is still present, a replacement number of approximately 150 will have been used and an additional 250 to 300 Negro physicians will have died, so that only about 60 to 80 Negro physicians will be added to those in civilian practice by 1946 and every three year period thereafter until the cessation of the war. Thus the ratio of Negro physicians to Negro population for many years after the war will be extremely unfavorable, and some solution will have

9. Lawlah, J. W.: How the Facilities of Our Medical Schools Could Be Enlarged to Meet the Prospective Shortage of Negro Doctors, *Negro Health News* 11:3 (Jan.-March) 1942.

to be formulated whereby many more Negro students will be trained in medicine.

It seems to me that the solution will have to be met through a number of pathways: First, for many years after the war, fellowships, scholarships or subsidies will have to be made available to Negro medical students so that the two Negro medical schools will continue to use their facilities at full capacity. If this is not done it is possible that the number of graduates from these two schools will sink again to a total of about 70 to 80 per year. Secondly, the seventy-five medical schools other than Howard and Meharry will have to assume a more liberal attitude and admit a larger number of Negroes to their classes, so that instead of graduating 8 or 10 yearly as they have during the past several years this will be increased to 40 or 50. Finally, it appears that Southern states and communities will have to develop a program of subsidization whereby Negro youths of promise will be chosen and sent to medical schools at the expense of the community, state or some foundation, with the understanding that these individuals will return to their respective state as soon as they have completed their medical training. The Commonwealth Fund has already experimented in this field with white physicians in Mississippi. These are three possible avenues of approach which will have to be considered in any postwar plan for better medical care for all people.

SUMMARY

1. A study of the distribution of Negro physicians in the United States for the year 1942 was undertaken and compared with a similar study made in 1932.

2. There has been a decrease in the total number of Negro physicians in the United States during the decade 1932-1942 of 5 per cent, although the Negro population has increased by about 8 per cent. This decrease has been felt more intensely in those areas which already were medically poor.

3. In 1942 there were 3,810 Negro physicians, or 1 to 3,377 Negroes. This ratio is less than one fourth that of 1 to 750 for all physicians in the United States. Furthermore, this ratio covers wide variations from 1 to 1,151 in the West North Central area to 1 to 6,171 in the West South Central area.

4. The South as a whole shows the lowest ratio, and this is reflected in the individual states. All Southern states, with the exception of five, showed ratios which were lower than the national average.

5. Negro physicians, as all physicians, have a tendency to concentrate in large cities. This applies with equal force in the North and South.

The Hysterical Constitution.—The hysterical constitution may be defined as a psychoneurotic state in which "ideas control the body and produce morbid changes in its functions" (Möbius). It is often found in neuropathic families. While symptoms may be latent for long periods, they may be manifested during adolescence, following emotional disturbance of any sort, traumatism or other causes. Formerly thought to exist only in women, it has been found to occur quite as often in men. Hysteria is characterized by stigmata which may be sensory, motor or psychic. The sensory stigmata may be found in any of the five special senses. The skin anesthetics are characterized by their distribution which do not correspond to normal sensory nerve areas and by the changeability of their extent, character and position. They frequently follow a suggestion made by the examining physician.—Davis, John E.: *Principles and Practice of Rehabilitation*, New York, A. S. Barnes & Co., Inc., 1943.

Clinical Notes, Suggestions and New Instruments

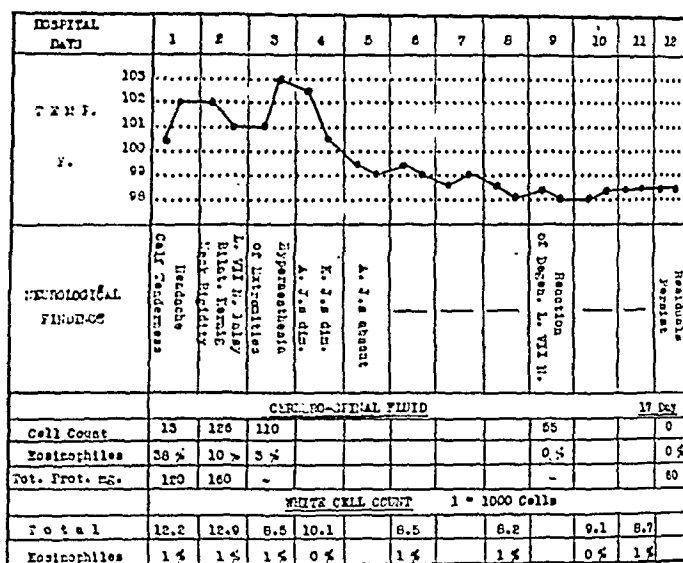
EOSINOPHILIA IN CEREBROSPINAL FLUID

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AND

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An opportunity to study a neurologic case in which there were eosinophilic granulocytes in the spinal fluid brought to our attention the comparative rarity of this finding and the paucity of reports in the American literature.

The first observations of eosinophilia in the cerebrospinal fluid were published independently in 1913 by Grund¹ and Waterhouse.² In both cases cerebral cysticercosis was the clinical diagnosis, and confirmation was established by postmortem studies. Among other cases described there were contributions by Schenk,³ Buscaino,⁴ Rizzo,⁵ Ugurgieri,⁶ Busse,⁷ di Maggio,⁸ Lange,⁹ López Albo and Feijóo,¹⁰ Canziani and Nobile¹¹ and Graña and Schenone.¹² The evaluation of this finding for the diagnosis of cerebrospinal cysticercosis has been discussed by



Temperature range, neurologic findings, spinal fluid studies and white cell counts.

Canziani and Nobile¹¹ and by López Albo and Feijóo,¹⁰ who agree that, whenever detected, it is practically pathognomonic. On the other hand, Lange⁹ and Monteiro and Salles¹³ attribute

Captain Joel Shrager, M. C., and Estelle Hall, medical secretary of Gorgas Hospital, rendered assistance.

From the Medical Service of Gorgas Hospital, Ancon, C. Z., Col. H. C. Dooling, chief of the medical service.

1. Grund, G.: Ueber Eosinophilie in Liquor cerebro-spinalis bei Rantengruben-Cysticercus, Deutsche Ztschr. f. Nervenhe. **46**: 236, 1913.

2. Waterhouse, R.: Cysticercus Cellulosa in the Central Nervous System, Quart. J. Med. **6**: 469, 1913.

3. Schenk, P.: Ueber einen intra vitam diagnostizierten Fall von Cysticercus racemosus, Deutsche Ztschr. f. Nervenhe. **66**: 301, 1920.

4. Buscaino, V. M.: Un caso di cisticercosi diagnosticato in vita, Riv. di pat. nerv. **32**: 136, 1927.

5. Rizzo, C.: Considerazioni sulle meningiti asettiche sperimentali, Riv. di pat. nerv. **46**: 1, 1935.

6. Ugurgieri, C.: Reperti del liquido cefalo-rachidiano e diagnosi in vita di cisticercosi cerebrale, Riv. di neurol. **4**: 472, 1931.

7. Busse, W.: Beitrag zur klinischen Diagnostik der parasitären Erkrankungen des Zentralnervensystems, Arch. f. Psychiat. **95**: 189, 1931.

8. di Maggio, F.: Sindrome di hipertensione intracraniale con eosinofilia del liquido cefalo-rachidiano, Gior. di med. mil. **82**: 1233, 1934.

9. Lange, O.: O liquido cefalo-rachidiano cisticercose de systema nervoso central, Rev. neurol. e psychiat. de São Paulo **2**: 3, 1936.

10. López Albo, W., and Feijóo, A.: Paraplejia progresiva y eosinofilia subaracnoidea; cisticercosis meningeal dorsal, An. de med. int. **5**: 137, 1936.

11. Canziani, G., and Nobile, A.: Due casi di cisticercosi cerebrale diagnosticati in vita, Riv. di pat. nerv. **51**: 55, 1938.

12. Graña, A., and Schenone, B.: Eosinofilia del liquido cefalo-raquideo por cisticercosis cerebral, Arch. urug. de med., chir. y especialid. **19**: 135, 1941.

13. Monteiro, F., and Salles, J.: Cisticercose cerebral, Thesis, São Paulo, 1934.

greater importance to the complement fixation test. It is also worthy of note that abnormal percentages of eosinophils in the blood were absent in a number of these cases.

Cerebrospinal eosinophilia in conditions other than cysticercosis has been reported on rare occasions in neurosyphilis by Mosny and Harvier¹⁴ and Mari.¹⁵ The finding has also been detected in experimental serum meningitis (horse serum) and schizophrenia treated with intraspinal malarial blood injections.¹⁶ Busse⁷ found sporadic eosinophils in the spinal fluid in a case of cerebral echinococcal infection. It appears then that for clinical purposes neurosyphilis and cystic disease of the central nervous system due to the echinococcus are the only other diseases to be considered in the differential diagnosis.

REPORT OF CASE

E. S., a white man aged 25, was admitted to the hospital on June 28, 1943 because of sore throat, malaise, general aches, feverishness, frontal headaches and cramps of the legs. The family history and past history were irrelevant. The onset of his illness was acute, following a 21 mile hike on the day before admission. The patient was well developed. There were moderate pharyngitis and tonsillitis, and tenderness of the calf muscle. Complete blood count, urine analysis, stool examination and blood serologic examination gave results within normal limits.

His course was stormy for a few days, as neurologic complications set in, as shown in the composite chart. On the day following admission his headache was accentuated, and moderate nuchal rigidity, bilateral Kernig sign and complete paralysis of the left facial nerve were detected. At this time a lumbar puncture was performed, which revealed 13 cells per cubic millimeter in the spinal fluid, 5 eosinophils and 8 lymphocytes. Culture of the nose and throat was negative. Signs and fever persisted and there was no response to chemotherapy (sulfadiazine). On the next day, June 30, there were 126 cells in the spinal fluid with 10 per cent eosinophils, 86 per cent lymphocytes and 4 per cent polymorphonuclear cells. Additional tests of the fluid revealed that the total protein was 160 mg. per hundred cubic centimeters, dextrose and chlorides were normal, the Wassermann and colloidal gold tests were negative, and smear and cultural studies were negative. Other examinations, including frequent blood counts, stool examinations, urine analyses, electrocardiographic studies, an x-ray film of the chest, eyeground examinations and agglutination tests, gave normal results. The eosinophil count of the peripheral blood was always within normal range. On July 1 there were 110 cells in the spinal fluid with 3 per cent eosinophils. Then he developed definite sensory disturbances of the extremities (hands and feet) and it was noted that the patellar reflexes were diminished and the achilles reflexes were absent.

His general condition gradually improved and no cells were found in the spinal fluid on July 14. However, he continued to present the neurologic residuals of left facial paralysis, sensory disturbances of the extremities and diminution of patellar and achilles reflexes until the date (July 31) of his discharge to a hospital in the United States.

COMMENT

The diagnosis of cerebrospinal cysticercus meningitis was the dominant consideration. Localization of the process at the base of the brain, which is rather common in cysticercosis, accounted for the facial nerve paralysis, and spinal meningitis was the basis for the rest of the neurologic symptoms. Spinal localization is rare, but it has been described.¹⁰

Neurosyphilis and echinococcal infection were more remote possibilities. There was no sign suggestive of syphilis, which was virtually ruled out in an acute meningitic process by negative serologic findings in the blood and spinal fluid. As

for echinococcal infection, the clinical picture is inconsistent with this condition, which usually produces the syndrome of brain tumor due to a rather large single cyst located in the cranial cavity. In view of all these facts it is believed that cerebrospinal cysticercus meningitis fulfills acceptable criteria for the diagnosis.

Cysticercosis of the central nervous system may be more frequently encountered than is generally recognized. With this possibility in mind, certain laboratory procedures are recommended: (1) sedimentation of the cerebrospinal fluid in search of eosinophils, (2) precipitin tests¹⁷ and intradermal tests¹⁷ in suspected cases.

SUMMARY

1. A case with the findings of eosinophilia in the spinal fluid and manifestations of acute cerebrospinal meningitis was observed.

2. The syndrome closely resembled cases of cysticercosis of the central nervous system previously described and was considered the most probable diagnosis.

3. The condition is more common than is generally recognized and in suspected cases such special procedures as sedimentation of the spinal fluid in a search for eosinophils and intradermal and precipitin tests are recommended.

A NEW APPARATUS FOR THE ADMINISTRATION OF 95 PER CENT OXYGEN

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PROVIDENCE, R. I.

The use of 95 per cent oxygen for the removal of nitrogen from tissue spaces and from certain cavities and viscera was advocated by Fine and his associates¹ in 1936. These investigators showed that replacement of nitrogen in the alveolar air by oxygen was followed by the reduction in the nitrogen tension in the circulating blood and the passage into the blood of a large proportion of any nitrogen trapped in the distended

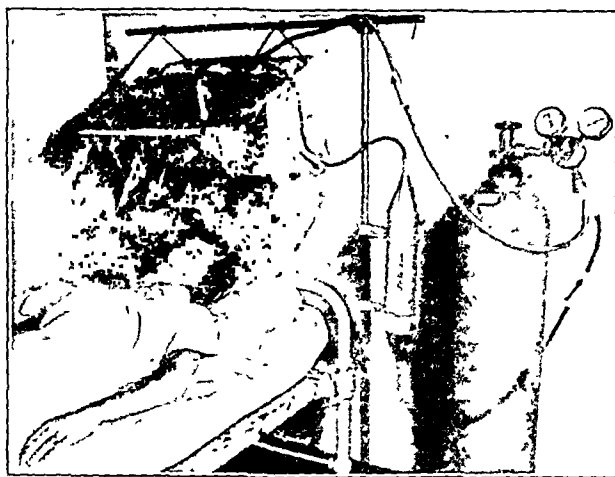


Fig. 1.—The entire apparatus in use on a patient

small intestine or in tissue spaces. During the past seven years this principle has been employed at the Rhode Island Hospital in the more severe cases of paralytic ileus as well as in a few cases of subcutaneous emphysema. The method has also been used to reduce the headache following acroencephalography. A short report of our earlier results was published with Dr. Palmer Congdon.²

14. Mosny, E., and Harvier, P.: Sur un cas d'eosinophilie meningee d'origine locale sans eosinophilie sanguine. Arch. de med. exper. 19: 273, 1907.

15. Mari, A.: Considerazioni sulla patogenesi e sul valore diagnostico della eosinofilia del liquido cefalo rachidiano. Riv. di pat. nerv. 10: 273, 1932.

16. Carrol, R. S.; Barr, E. S.; Barry, R. J., and Matzke, D.: Aseptic Meningitis in the Treatment of Dementia Praecox. Am. J. Psychiat. 4: 673, 1935. Izard, L.: Eosinophilie du liquide cefalo rachidien au cours d'une meningite cerebro-spinale. Paris med. 2: 45, 1925.

17. Faust, E. C.: Human Hematology, Philadelphia, Lea & Febiger, 1939, pp. 606-608.

From the Departments of Anaesthesia and Medicine of the Rhode Island Hospital.

1. Fine, J.; Banks, B. M.; Sears, J. B., and Herrmann, L.: Treatment of Gaseous Distention of the Intestine by the Inhalation of 95 per Cent Oxygen; Description of Apparatus for Clinical Administration of High Oxygen Mixtures. Ann. Surg. 103: 375 (March) 1936.

2. Congdon, P., and Burgess, A. M.: Clinical Experience with 95 per Cent Oxygen in the Treatment of Abdominal Distention and Other Conditions. New England J. Med. 221: 200 (Nov. 24) 1939.

In this work the apparatus for administering 95 per cent oxygen was the closed box technic described by one of us.³ We have attempted also to use high concentrations of oxygen by one of the masks in common use (B. L. B. or O. E. M.) but have found that with neither of these is it possible to maintain a concentration completely satisfactory for the purpose, although at times their use has been followed by clinical improvement. In the case of the B. L. B. mask there is, even at a flow of 8 liters per minute, an appreciable degree of rebreathing with consequent carbon dioxide accumulation, and in the case of the O. E. M. it appears to be impossible to prevent

Negative Pressure at Various Flows of Oxygen

Oxygen Flow, Liters per Minute	Negative Pressure, Inches of Water
2	7 $\frac{1}{2}$
3	11 $\frac{1}{4}$
4	13 $\frac{1}{4}$
5	21 $\frac{1}{2}$
6	31 $\frac{1}{2}$
7	41 $\frac{1}{2}$
8	51 $\frac{1}{2}$
9	7
10	8 $\frac{1}{4}$
11	9 $\frac{1}{2}$
12	11

collapse of the bag on inspiration even at rates of oxygen flow as high as 12 liters per minute. In our own closed box technic, although the carbon dioxide concentration has not been found over 2.5 per cent, it has seemed to us that a better method for the removal of this gas could be devised and we

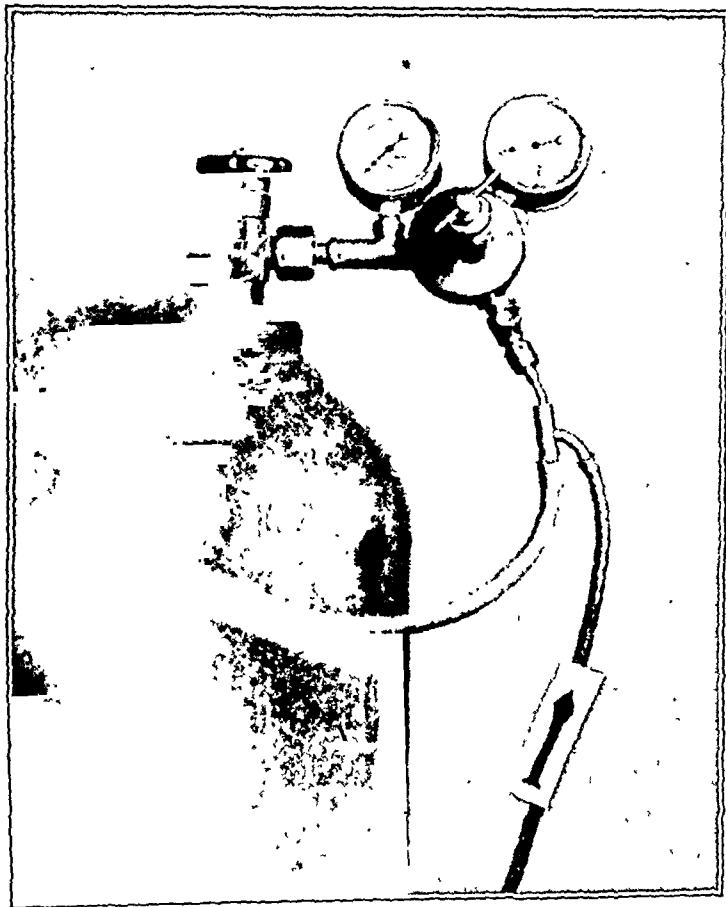


Fig. 2.—The venturi valve attached to the oxygen regulator.

have therefore developed the apparatus described herewith, following a suggestion made to us by Mr. Joseph Sears, the then head orderly in charge of oxygen apparatus.

The apparatus consists of a closed oxygen box of the usual type without the tray of soda lime that was formerly used.

3. Burgess, A. M.: Oxygen Therapy—A Modification of the Box Method for Giving 95 per Cent Oxygen, *New England J. Med.* 216: 467 (March 18) 1937.

Instead of eliminating carbon dioxide by such a tray suspended inside the box, the respired atmosphere is circulated through a cylinder of soda lime outside the box. Instead of using a motor blower, which would increase the cost and incur the hazard of fire, the injector principle is employed. As the oxygen leaves the cylinder under great pressure it is passed through

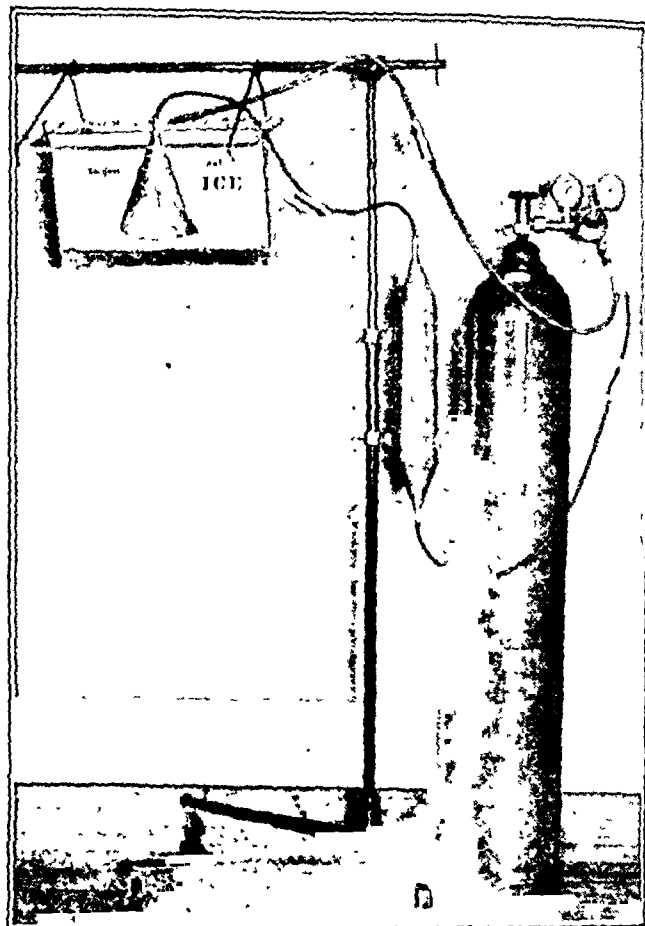


Fig. 3.—The apparatus assembled without the canopy to illustrate the recirculation of atmosphere through the cylinder of soda lime.

a venturi valve. This creates a negative pressure in a side tube. Thus the flow of oxygen, as may be noted from the accompanying illustrations, not only serves to satisfy the patient's oxygen requirements and maintain the desired 95 per cent concentration but also satisfactorily produces a circulation through the soda lime, which reduces the carbon dioxide in the box to about 1 per cent.

This venturi valve creates varying degrees of negative pressure dependent on the flow. The accompanying table gives the amount of negative pressure in inches of water at the various flows of oxygen in liters per minute.

It is hoped that the availability of this inexpensive and satisfactory method of developing and maintaining high nitrogen free atmospheres will encourage the use of this important type of therapy in conditions in which nitrogen removal from tissue may be of advantage to the ill patient.

454 Angell Street.

Thoracic Surgery—Youngest of All Surgical Specialties.—Thoracic surgery is the youngest of all the surgical specialties. It is so young that the surgeons who today concentrate their efforts on diseases of the chest are the first generation of thoracic surgeons, the men who originally did the daring surgical feats that have earned recognition for their specialty. They are perhaps the only real pioneers in surgery that the present day medical student can view in person. And if he sees one of them in action, removing a lung or a mediastinal tumor, with the great cavity of the chest opened wide and the heart and great vessels beating away in plain view, he may well regard the thoracic surgeon as unbelievably bold. For this is the most spectacular of all modern surgery.—Haagensen, C. D., and Lloyd, Wyndham E. B.: *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

Special Article

EMERGENCY MATERNITY AND INFANT CARE PROGRAM

FOR THE WIVES AND INFANTS OF MEN IN
THE ARMED FORCES

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SCOPE AND PURPOSE OF PROGRAM

The Emergency Maternity and Infant Care program provides medical, nursing and hospital care for the wives and infants of enlisted men in the four lowest pay grades of the Army, Navy, Marine Corps and Coast Guard. The program became effective March 18, 1943 and is now in operation in forty-eight states, Hawaii, Alaska, Puerto Rico and the District of Columbia. By the end of the first year of operation it is expected that maternity and infant care will have been made available to nearly a quarter of a million wives and infants of enlisted men.

The EMIC program, as it is known for short, was made possible by the Congress for the primary purpose of relieving the enlisted men of worry and uncertainty as to the availability of the maternity and infant care needed by their families and how the cost of care will be met, and of assuring their wives, wherever they may happen to be living, that care will be provided through an organized program under state health departments. Those professional persons who are participating in the program may derive great satisfaction from the enthusiasm with which the enlisted men and their families have welcomed the program and from the fact that they are contributing materially to raising the morale of our armed forces. That the program does raise the morale is the judgment of Army and Navy officials and of others who are directly concerned with morale.

The program through which maternity and infant care has been made available is a wartime measure specifically planned for the duration of the war and a period of six months thereafter. The regulations of the Secretary of Labor for the allotment of funds have so defined the period of its operation. The federal and state agencies given responsibility for administration of this program must exercise that responsibility in the light of the contribution it can make to the war effort. The responsibility for planning given to the state agencies must be interpreted to mean positive action to make available, as far as is possible under the conditions in any state, the care provided under the program for any wife of an enlisted man in one of the four lowest pay grades who seeks it for herself or her infant, regardless of whether she is a resident of the state or not.

The magnitude of the emergency which this program is designed to meet is proportionate to the great number of men in our armed forces. The geographic area involved comprises all of the states and territories of the country, for from all of them enlisted men have entered the armed forces. Applications for care are currently being received at the rate of more than 30,000 a month. Many come from wives who are only temporarily resident in the state where application is made.

In the coming year it is estimated that between 300,000 and 400,000 wives of enlisted men may apply for maternity care under the emergency program and that the number of applications for medical care for infants may reach 60,000 to 80,000. The number of infants who will be given protective health service, such as general health supervision and immunization, will depend on available organized services and on funds available to amplify those services.

The effective operation of the program is important to a large number of enlisted men—approximately 87 per cent of enlisted men are in the four lowest pay grades. If it is to continue to serve the enlisted men and their families as well as possible there must be a clear understanding of the program—its scope and limitations, the services it seeks to provide and the compensation for services, the major policies and the experience and principles which underly these policies. The purpose of this report is to contribute to such an understanding.

FRAMEWORK OF ADMINISTRATION

The EMIC program had its origin and its legislative authority in the provisions of title V, part 1, of the Social Security Act. Funds for its operation have been made available through appropriations to the Children's Bureau of the U. S. Department of Labor for grants to the state health agencies for medical, nursing and hospital care of the wives and infants of enlisted men in the four lowest pay grades of the armed forces. The Secretary of Labor when establishing regulations with respect to allotment of funds to the states has required the Children's Bureau to administer the expanded program, though financed by special appropriations, under certain conditions laid down in the Social Security Act.

How the Program Works.—Any wife of an enlisted man in one of these four pay grades may apply to the state health agency for maternity care for herself or medical care for her infant during the first year of his life. Her application includes information with respect to the service connection of her husband or the father of the baby.

In accordance with provisions of state plans the physician (or the clinic or hospital) from whom she seeks care obtains an authorization to give care (usually on the same blank with the wife's application) from the state health agency's maternal and child health division. Each state health agency outlines in its state EMIC plan the specific services which the state will authorize, the rates of compensation for services and its standards to safeguard quality of medical and hospital care. These state plans are developed in accordance with the general policies of the Children's Bureau.

Local health agencies cooperate with the division of maternal and child health of the state health agency through services rendered by the local staff in child health conferences, antepartum clinics, mothers' classes, public health nursing service and, to varying degrees, in sharing in the handling of applications and authorizations. The development of the state plan, its administration and operation are responsibilities of the state health agency.

The funds are allotted to the states by the Secretary of Labor as the appropriation act of Congress requires. Under the provisions of the act the Children's Bureau is responsible for review and approval of the state plans

to establish that they do in fact assure proper and efficient operation of the plans and make provision for maternity and infant care (medical, nursing and hospital services) in accord with the intent of Congress. So that its responsibilities may be carried out consistently, with as little confusion or uncertainty as possible, and that the state agencies may be informed in advance as to the standards it would use in approving state plans, the Children's Bureau formulated certain administrative policies and minimum requirements. In many instances state health departments have been able to go beyond these minimum requirements and have established within their own states higher standards than those formulated by the federal agency. The movement of wives from state to state as their husbands in the armed forces are transferred from one military establishment to another creates interstate administrative problems and a need for some uniformity among states as to services provided and payment for services. The policies of the Children's Bureau have been intended to meet some of these needs.

MEDICAL AND RELATED SERVICES OF THE PROGRAM

The program is intended to provide the various services needed for maternity and infant care, payments being made directly to physicians, hospitals, nurses or others for service. The funds are not to be used, however, to replace similar services otherwise available without cost and without financial investigation, such as those provided by the Army or Navy, or state and local health agencies.

Medical, Hospital and Nursing Service.—The service to wives and infants of enlisted men for which state plans provide payment are the following:

1. Medical services (and, when necessary, surgical services) provided by physicians for complete maternity care (a) throughout pregnancy, labor and six weeks post partum, (b) for major intercurrent conditions occurring during but not attributable to pregnancy and (c) for the care of sick infants
2. Consultant services of specialists
3. Hospital care for maternity patients and sick infants whenever needed and for whatever period of time necessary
4. Immunization of infants against smallpox, diphtheria and whooping cough
5. Bedside nursing care for maternity patients and infants when requested by the attending physician.
6. Other services such as blood for transfusion and ambulance service when requested by the attending physician

The plan provides, then, not only for the services and facilities ordinarily required but also for the more seriously ill patients and for medical and surgical complications. There are no restrictions with respect to place of residence, race, color or creed.

Related Health Services.—State and local health departments make available various maternal and child health services to supplement the care provided by the emergency program. All patients under the program are referred to local health agencies for public health nursing service, wherever they are available. The advice and assistance of public health nurses in both the antepartum and postpartum period are of great value to many of these patients, among whom a large number are still in their teens and are living away from their homes. Many of these enlisted men's wives, confronted

with social problems which relate either to their own maternity care or to the care of their infants, are unfamiliar with the resources of the community in which they happen to reside and often unaware of channels of assistance available to them.

Physicians who have attended any considerable number of these young wives of servicemen know that they are oftentimes living under difficult conditions. They are often strangers living in strange places. Many are burdened with financial, social and emotional problems. Physicians cannot be expected, especially in these times of stress, to assume responsibility for more than the direct medical services which the patient requires. Arrangements for hospital services, special nursing services, care of the postpartum mother after early discharge from the hospital, and other phases of care which may be necessary, are the responsibility of state and local health agencies. The state health agencies are finding it helpful to make available medical-social personnel who can work in cooperation with state and local welfare departments and other agencies, such as the American Red Cross, the Army Emergency Relief and Navy Relief Society.

The enlisted men may thus be more secure in the knowledge that, when their wives submit an application for care, the state health department assumes responsibility not only to pay for the care but to see that all appropriate and necessary services are actually made available to the patient if possible.

MAINTAINING QUALITY OF MEDICAL CARE

The program has been carefully considered and developed with the purpose of preserving and, so far as possible, improving standards of quality of care. The Children's Bureau is fully in accord with the American Medical Association, the Academy of Pediatrics and other professional associations in viewing the question of quality of medical care as of paramount importance, but it believes that under a system of cash allowances to soldiers' wives, recommended by the American Medical Association, there would be little or no opportunity to influence the standard of care for these patients.

Because it is designed to provide service, however, the EMIC program can set up certain minimum safeguards for the maintenance of standards of medical, nursing and hospital care. Obviously, still greater safeguards could be provided if the shortage of physicians and nurses did not exist, if there were a better distribution of obstetricians, pediatricians and hospitals or if state agencies would or could provide full time physicians in areas where there is a shortage. Nevertheless the very existence of the program does make possible certain services that tend to improve the quality of care.

Medical Care.—The program makes provision for two services which, if used as intended, will aid materially in maintaining and improving the quality of care, namely consultation by specialists and special services such as bedside nursing care in a home or special nurses in a hospital, x-ray service, blood for transfusions and ambulance service. Through this provision physicians are relieved from all concern that the patient's resources will not permit these services. The patient herself, or the infant's mother, and the husband in the armed forces gain the assurance that financial consideration will not limit the medically necessary service or impose restrictions on complete and satisfactory care.

The program places no restraint on the wife of an enlisted man by expecting her to pay toward the cost of her care or that of her sick infant. Even the first visit at the time of her application for care and emergency care for herself or her sick infant will be paid for. There is no waiting period. This should encourage early care for a mother or a sick baby.

The program further provides that state health agencies may employ physicians full time or part time to meet the needs of areas where a shortage of physicians affects the amount and quality of care.

Hospital Care.—Under the EMIC program the state health departments have established certain requirements or standards for hospital care of infants and maternity patients, based on minimum requirements set up by the Children's Bureau as a guide for its use in approving state plans. Hospitals which are unable to meet these standards are advised by the state staff how they may succeed in doing so. Especially at this time, when hospitals are crowded and in many instances understaffed, physicians recognize the importance of energetic efforts to maintain reasonable levels of good practice for the safety of their patients. The emergency program has helped in this direction.

Hospitalization of maternity patients rather than home delivery is, of course, not always a guaranty of better standards of care. When coupled with an earnest attempt to assure maintenance and improvement of hospital standards, however, increasing hospitalization of maternity patients is generally considered a step toward improved maternity care. The percentage of maternity patients hospitalized in the emergency program thus far (86 per cent in December 1943 for all states reporting) is considerably greater than was the case for all maternity patients in the United States in 1942 (68 per cent). There is little doubt that the provision of funds for payment for care to hospitals has increased materially the hospital facilities available to enlisted men's wives and infants.

METHODS OF PAYMENT FOR SERVICE

In arriving at appropriate methods of compensation for medical and hospital service, the Children's Bureau has considered the following:

1. The Congress has made it clear that the program is not to be administered as a charity service with a "means test," nor, on the other hand, was it contemplated that the rates of payment for care should reflect specialists' rates or even the maximum rates of general practice, or that private accommodations in hospitals would be provided unless medical necessity should require it.

2. In the neighborhood of 75 per cent of all maternity care by physicians and a very large proportion of care of sick babies is in the hands of general practitioners.

3. Considerable variation in rates, both for hospital care and for medical practice, exists in different parts of the country or from place to place in the same general geographic area.

4. Payments to hospitals by public agencies have not as a rule reflected actual cost of care but an amount less than cost.

5. The amount of "red tape" for the physician participating in any public program of medical care varies greatly with the method of payment—whether on a fee for individual service basis, a case basis, a flat rate covering all care for a period of time or a salary basis.

6. Appropriate limitations on expenditures are necessary in any program supported by public funds in order that adequate control of such funds may be had.

7. Under the emergency program all physician's and hospital bills would be paid—there would be no uncollected bills for any care that had been properly authorized.

It was the responsibility of the Children's Bureau to consider these and other factors and outline a plan of payment that would be as simple to administer and leave as much flexibility in state planning as possible under the circumstances of the program, give reasonable compensation for service rendered, aid in the maintenance of care of good quality, assure reasonable economy in the use of public funds, and payment for all types of care provided under the plan even though the wives and infants moved from state to state.

Payments for Medical Service.—For payments to physicians for maternity care and care of sick infants the decision was reached that, in the circumstances, payment on a case basis was the plan that would most nearly meet the needs of the program. The way was left open for payment of part time or full time salaries and payments to clinics as occasion required. The fee for service plan was believed to be uneconomical from both a financial and an administrative point of view, except for consultation visits and payment for care of illnesses requiring only one or two visits; it certainly involves more complex procedures for reporting by participating physicians.

Some questions have been raised as to the fairness of an average case rate based on periods of time and minimum number of visits, regardless of whether the patient requires a minimum of care or a great expenditure of time on the part of the physician and the assumption of grave responsibility. It is believed, however, that the physician who has a moderate number of patients under the program will in the end be compensated reasonably under the average case rate plan. It is true that some physicians who attend only a few patients under the program may happen to have a disproportionate number of time consuming and difficult cases. However, if the average case rate plan should be abandoned in favor of a detailed schedule of fees differing for every type of service provided, "red tape" and paper work for physicians would be enormously increased, as would administrative procedures and costs.

For its use as a guide in reviewing rates of payment established by state agencies, the Children's Bureau has set up maximum rates that may be approved. The rates for medical care are inclusive of all services usually included in the type of care being given. When unusual conditions arise that are not directly related to maternity care and require home or hospital visits, as, for example, prolonged illness or a surgical condition during pregnancy, special payment may be made by the state health agency to the attending physician or to a consultant, or, if necessary, to both.

In a few states differentials in rates within the maximum for maternity care have been established for general practitioners and specialists. There is some difference of opinion among physicians, including specialists, as to whether in a public program of this nature higher rates should be paid to specialists giving routine care in cases of average difficulty or whether such specialists should be paid higher rates only for the more difficult cases requiring greater skills. This is a matter for further consideration. Perhaps the chief contribution of specialists in this Emergency Maternity

and Infant Care program will be to serve as consultants, for which type of service special rates of payment are provided.

Payments for Hospital Care.—The method and rates of payment to hospitals have been worked out on a basis which, it is believed, will provide good care and adequate accommodations for the usual case, and special accommodations and services when the medical condition requires them. In contrast to many other plans for the purchase of hospital care, the emergency program does not require that the states attempt to secure hospital care below cost. On the contrary, provision is made for inclusive rates of payment based on per diem cost as calculated by each hospital from a simple annual report of operating expenditures. For many hospitals the calculated per diem cost for this program is higher than the amount hospitals currently charge for ward service; in some the per diem cost is higher than the basic semiprivate charge. None the less, it is the calculated per diem cost which the state health departments are prepared to pay for patients hospitalized under the program. The hospital may give these patients semiprivate accommodations or private rooms when it is deemed medically desirable. The rate of payment remains the same—the calculated per diem cost.

The per diem rate paid to hospitals is inclusive of all services, salaries and other costs which form a part of the hospital's total expenditure for the care of patients, and all of these items of normal and special expenditure are included in the calculation of the per diem cost. When unusual expenditures, such as special nursing service, are not normally provided by the hospital staff and included in cost statements, extra payment may be made. The fact that the rate is in general an inclusive rate enormously simplifies the problem of administrative setup for payment for hospital services. The task of the hospital business department is also simplified, so that time and money are saved by both the health department and the hospital.

Not all hospital administrators are fully satisfied with all the details of the present method of calculation of per diem costs, nor is the Children's Bureau. With the assistance and cooperation of hospital administrators, improvements are being worked out.

THE DEVELOPMENT OF THE ADMINISTRATIVE POLICIES¹ BY THE CHILDREN'S BUREAU

In an earlier section of this report it was pointed out that the Children's Bureau has the responsibility under the law for approving state plans and that in exercising this responsibility, as well as the responsibilities with which it is charged under regulations of the Secretary of Labor, the Children's Bureau has established certain policies to serve as guides in the review of state plans. Questions often asked in this connection are: How were these policies arrived at? To what extent are they inherent in the law or interpretative of the intent of Congress? Are they fixed for the duration of the program?

To answer these and other questions similar in nature, the origin and development of the program and certain principles made clear in Congressional debate must be understood.

Origin of the EMIC Program.—The Children's Bureau's administrative policies have developed out of experience that has accumulated under the Crippled Children's provisions of the Social Security Act and the special maternity care projects under the Maternal and Child Health program. The first state program for care of wives of servicemen took shape in the state of Washington in 1941 as one of these maternity care projects under the regular Maternal and Child Health program of the state health department. During 1942 twenty-six additional individually planned state projects for servicemen's wives had been started, growing out of the need for such a program in each state. In a majority of these projects there was no "means test" or financial investigation. Many of the projects were limited to one or more areas. In all instances the projects provided for direct payments to physicians and hospitals. By late fall of 1942 still other states had requested funds for this purpose, but money available under title V, part 1, of the Social Security Act was exhausted.

The first request to Congress for additional funds in January 1943 was built up item by item in accordance with specific requests from state health agencies for funds to carry their projects through the fiscal year. Each subsequent request to Congress has been based on the experience of the states. As it became apparent that funds would be made available as needed and that Congress did not wish a "means test" to be applied, state health agencies broadened the scope of their plans to include any wife who applied in any part of the state. By June 30, 1943, forty-three states had approved plans in operation. Today all states and territories and the District of Columbia have plans in operation. Appropriations were made by the Congress during the calendar year 1943 as follows: March 18, \$1,200,000; July 12, \$4,400,000; October 1, \$18,600,000.

Participation of Advisory Groups.—Throughout its administration of the Maternal and Child Health program under the Social Security Act, the Children's Bureau has had the benefit of advice from a committee of physicians, public health officials, nurses and medical-social workers. At a meeting of the medical members of this committee on April 6, 1943 all proposed policies of the Children's Bureau for the administration of the EMIC program were reviewed, and a number of modifications were made in the light of the opinion of the committee. Policies with respect to nursing or medical-social aspects of the program have been reviewed with the appropriate members of the committee. At a meeting of the medical members of the committee in October 1943, policies were again reviewed and recommendations with respect to further modifications were made.² On the advice of the committee at its meeting in October 1943, and in view of the participation of general practitioners in the EMIC program, five additional members in private practice, three of whom were general practitioners, were appointed to the committee.

On Dec. 10 and 11, 1943, in response to a resolution of the executive board of the American Academy of Pediatrics, the Children's Bureau held a conference of official representatives of the servicemen and official representatives of the professions actually rendering this service, namely the American Medical Association, the American Hospital Association, the U. S. Public

1. EMIC Information Circular No. 1. Administrative Policies, Emergency Maternity and Infant Care Program. United States Department of Labor, Children's Bureau, Washington, D. C., 1943; J. A. M. A. 124: 241 (Jan. 22) 1944.

2. Report of Meeting of Maternal and Child Health Advisory Committee, J. A. M. A. 123: 845 (Nov. 27) 1943.

Health Service, the American Association of Obstetricians and Gynecologists and the American Academy of Pediatrics. In addition the Children's Bureau included official representatives of the Association of State and Territorial Health Officers and of five national organizations that had been active in sponsoring the program. A report of this conference has been published.³ The proposed administrative policies were reviewed again in detail and subsequently were completely rewritten. Practically all of the formal recommendations of the advisory committee made in October and of the conference in December were incorporated in the final statement. After the relation of each of the Children's Bureau policies to the intent of Congress, as expressed in the appropriation acts and in hearings and debate, was clarified no recommendations for any substantial change in overall policy were made by the conference.

To carry forward the discussion and obtain a wider opinion on the problems of health supervision and medical care of infants under the EMIC program as expressed in a recommendation at the December conference, a conference of pediatricians, health officers and maternal and child health directors was held at the Children's Bureau on Feb. 1 and 2, 1944. The responsibility of the pediatrician, the general practitioner and the child health conference in providing health supervision, the relationship of health supervision to medical care and methods of financing these services were discussed in detail. The Children's Bureau is taking all points of view into consideration in developing its policies in this field and in making recommendations as to financing the program.

THE BASIS FOR MAJOR POLICIES

Each of the meetings and conferences of the past year has in turn brought out the necessity of renewed and repeated clarification of the basis for certain major policies for the administration of this program, namely the elimination of a "means test," the exclusion of supplementary fees or charges, payment for services provided instead of cash allowances, and free choice of physician or clinic. Briefly the basis for these policies is as follows:

The Elimination of a "Means Test."—The Congress had made it clear that this program is not to be administered as if the service were "charity" but as a part of the war effort and a contribution to the morale of the armed forces. This must be interpreted to mean that no steps will be taken when the wife of any enlisted man in one of the four lowest pay grades seeks care that would raise questions as to whether or not she is entitled to the care, aside from the establishment of the service connection of the husband or father, or whether she could or should pay part of the cost. If this were not the policy governing the administration of the program, enlisted men would never be certain that their wives were "eligible" for care until a financial investigation had been completed. Many might have to leave the country without this knowledge. The primary purpose of the program would not have been achieved.

The Exclusion of Supplementary Fees and Charges.—Again the primary purpose of the program underlies this policy, namely that the serviceman should be relieved of uncertainty as to how the cost of his wife's maternity care or his infant's medical care is to be

met. The argument is sometimes advanced that if a serviceman's wife can afford to pay a supplementary fee to hospital or physician, or to pay the whole cost of either hospital or medical care, she should be permitted to use the federal funds in partial payment in order to obtain private accommodations or to be assured of the care by a physician who otherwise would not accept her as his patient.

If, under the program, physicians were to be permitted to decide after discussions with the wives of the servicemen which ones could and which ones could not make an extra payment for medical care, or if hospitals were permitted to negotiate with the wives as to whether they could or could not pay an extra amount that would make possible the more extensive use of private accommodations, a primary purpose of the program would be defeated. To all intents and purposes the physician or hospital would be applying a means test. Such a procedure would soon be universal in application, and many wives who could ill afford to pay even a small additional fee would be involved in the same type of questioning as those who could afford it.

The pay received by enlisted men in the four lowest pay grades ranges from \$50 to \$78 a month. To institute any measures for the purpose of selecting that small fraction of wives—probably less than 10 per cent—who have "outside means" and who therefore might be charged extra by physician or hospital would discriminate against the wife who does not have such "outside means"; and would be contrary to the democratic principles under which their husbands have been drafted for service in the armed forces.

Under the program the state health agency assumes the responsibility to provide, so far as it is available, all the care that may be recommended by the physician or clinic as medically necessary. The program does not provide luxury facilities, but the rates paid to hospitals are such that the type of accommodation provided may be adapted to the medical need of any patient. Application for care under this program is entirely voluntary. The program is not intended for those who wish to pay for luxury accommodations. On the other hand, care of the kind that is provided under the program is available to any wife who applies for it for herself or infant regardless of her own resources. Experience under the program shows that so far only about three fifths of all eligible wives are applying for care under the program.

Payments for Service Instead of Cash Allowances.—The legislative history of the appropriations by Congress for this emergency maternity and infant care program has made it clear that it was the intent of Congress to provide care rather than cash allowances. At the time of the passage of the special deficiency appropriation in September 1943 an amendment to the bill that would have converted the program from one of service to cash allowances, if it had passed, was defeated by a vote of 115 against, to 8 in favor. The policy of payment directly to physicians, hospitals and others rendering care is governed, therefore, by Congressional action.

It is believed that this policy should be continued if the purpose of the program is to be carried out. Were a plan for payment of cash allowances to be substituted for the present program there could be no assurance given to the servicemen that the amount of the allowance would be sufficient to meet the exceptional costs of

3. Conference on Emergency Maternity and Infant Welfare, J. A. M. A. 123: 1125 (Dec. 25) 1943.

serious illness or even all the ordinary medical and hospital costs of maternity care or care of sick infants, such as are provided under the existing program. With the best possible intentions many young wives would be likely to spend the money in ways which would fail to secure good medical care and when the allowance was used up there would be difficulty in meeting the costs of prolonged hospital care, special nursing service or consultant service for the mother or her infant. Furthermore, there would be no assurance that the cash allowance would be spent for the purpose for which it was granted, nor would there be a nationwide plan to provide for the needs of wives and infants who move from state to state. A system of cash allowances would not provide for the necessary state and community planning that is required if community health and welfare services are to be available to assist these wives in learning of resources for care and in obtaining care.

Free Choice of Physician and Clinic.—Congressional debate has made it clear that it was the intent of the Congress that the wives of servicemen should have free choice in the selection of physicians. The policies of the Children's Bureau have carried this out. No state plan for maternity care or care of sick infants has been approved that did not provide that the wife or mother might choose any physician whose qualifications met the state standards or any clinic or hospital approved by the state agency. How this principle can be applied to health supervision of infants is now being studied. Whether health supervision can be extended beyond the use of state and local child health facilities depends on several factors, including availability of physicians qualified to give care and costs of such supervisory service.

CONCLUSION

The policies of the Children's Bureau in the administration of this program are not to be regarded as fixed "for the duration," except so far as they are governed by the will of Congress. As experience indicates that they should be modified, changes will be made. Suggestions, comments and criticisms from those administering the program and those concerned with rendering the care will be welcomed and will be carefully considered by the Children's Bureau. In arriving at administrative decisions the bureau must constantly be aware of the effect that each may have on the men in service, of the needs and problems of servicemen's wives in seeking maternity and infant care, of the professional responsibilities and problems of physicians, nurses, hospitals and others rendering care, and of the practical experience of the state and local health agencies in administering the program.

The active cooperation of all who participate in the EMIC program is necessary to carry the program forward successfully through the war period and is earnestly sought by federal and state agencies charged with the administration of the program and by those concerned with the contribution that it can make to the morale of the enlisted men. The thousands of wives and infants that are now being given care daily is evidence of the great number of physicians, nurses and hospitals that are participating with the state and local health agencies in the program and so contributing to the war effort. The patriotic spirit with which service is being rendered is widely appreciated and, not least of all, by the wives of the enlisted men and by the servicemen themselves.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

GLOBIN INSULIN WITH ZINC.—"Globin insulin (with zinc) is a preparation, in a hydrochloric acid medium, of insulin modified by the addition of globin (derived from the hemoglobin of beef blood) and zinc chloride. The quantity of insulin used is such that each cubic centimeter of the finished preparation contains 80 U. S. P. units of insulin. The quantity of globin used (calculated as 6.0 times its nitrogen content) is not less than 3.6 mg. and not more than 4.0 mg. for each 100 U. S. P. units of insulin used. The preparation also contains, for each 100 U. S. P. units of insulin used, not less than 0.25 mg. and not more than 1.50 mg. total nitrogen. The pH of the finished preparation is not less than 3.4 and not more than 3.8. If necessary, either hydrochloric acid or sodium hydroxide may be added to obtain the required pH . The finished preparation also contains not less than 0.15 per cent and not more than 0.20 per cent (W/V) cresol-U. S. P., or not less than 0.20 per cent and not more than 0.26 per cent (W/V) phenol-U. S. P. The preparation is sterile."—Regulations promulgated Aug. 24, 1943 by the Administrator, Federal Security Agency: Certification of Batches of Drugs Composed Wholly or Partially of Insulin [8 Fed. Reg. 11837 (Aug. 27, 1943)].

Standards for Globin Insulin with Zinc and the Globin used in its preparation are set forth in the regulations cited.

Actions and Uses.—The effects of globin insulin with zinc are essentially the same as those of insulin (which see) except that the action is intermediate between that following regular insulin and protamine zinc insulin. The period of greatest effect extends from the eighth to the sixteenth hour after injection, almost disappearing at the end of twenty-four hours. This agent may be used for the treatment of diabetic patients in whom regulation of diet alone is incapable of providing adequate control and may be used in some patients to replace, wholly or partly, ordinary insulin. It is claimed to be indicated for those patients who require more than one daily injection of unmodified insulin and for those who cannot be controlled by other forms of insulin or who exhibit a sensitivity to protamine. It is said also to produce fewer local reactions on injection. It is not recommended for the treatment of diabetic coma and should never be administered intravenously. Globin insulin with zinc is quite stable but nevertheless bears on the label an expiration date for usage.

Dosage.—The general principles underlying the administration of this form of insulin are the same as those governing the use of unmodified insulin. It must be administered only by deep subcutaneous injection, not intramuscularly or intravenously. The daily dose required must be determined by a study of the patient. However, a starting dose may be about two thirds to three fourths of the total daily dose of regular insulin. This may be increased slowly as needed. If the patient has been receiving protamine zinc insulin, the globin insulin dosage on the first day should not exceed one-half the total dose of all insulin (regular, protamine zinc) received on the previous day. On the next day the dose may be increased to two thirds of the previous total insulin dosage and then slowly adjusted as required.

BURROUGHS WELLCOME & CO., INC., NEW YORK

Globin Insulin with Zinc: 10 cc. rubber capped vials.

U. S. Patent 2,161,198 (June 6, 1939; expires 1956).

SOLUTION OF EPINEPHRINE HYDROCHLORIDE 1:100 (See New and Nonofficial Remedies, 1943, p. 267).

The following product has been accepted:

CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N. Y.

Solution Epinephrine Hydrochloride 1:100: 5 cc. Contains epinephrine 0.01 Gm., chlorobutanol 0.005 Gm. and sodium bisulfite 0.0001 Gm. as preservative in isotonic solution of sodium chloride.

HOSPITAL SERVICE IN THE UNITED STATES

TWENTY-THIRD ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

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The report for 1943 represents the Twenty-Third Annual Census of Hospitals by the Council on Medical Education and Hospitals of the American Medical Association. Included in this survey are 6,655 registered hospitals with a combined capacity of 1,649,254 beds and 77,134 bassinets. Their admissions reached a total of 15,374,698 during the year, the births a total of 1,924,591 and the average daily census 1,257,124. These figures when compared with previous reports give a clear indication of the enormous expansion that has taken place in the hospital field incident to wartime needs.

beds, an increase of 255,735 since 1942. The hospitals operating under state, county and city-county control showed an increase of 5,996 beds, whereas the church related and other nonprofit hospitals gained 6,416. A decrease in capacity occurred in the following groups: municipal hospitals 1,373 beds, proprietary hospitals 1,347.

The number of admissions in the registered hospitals set an all time record of 15,374,698, including neither newborn infants nor outpatients. This is an increase of 2,829,088, or 22.5 per cent, over the previous twelve months period. Most of this gain occurred in the

SUMMARY OF HOSPITAL DATA

	Number	Beds	Bassinets	Patients Admitted in 1943
1. Registered hospitals and sanatoriums approved for internships, residencies and fellowships	1,164	632,719	34,891	7,007,723
2. Other registered hospitals, sanatoriums and related institutions	5,491	1,016,535	42,243	8,366,975
Total registered	6,655	1,649,254	77,134	15,374,698
Of the foregoing the American College of Surgeons approves	2,678	837,205	52,401	9,631,875

Found unsatisfactory on investigation (capacity 15,215)

Number

Unclassified emergency stations, clinics, offices, cottages and so on, with facilities for bed care (capacity unknown)..... 2,585

Hospitals and sanatoriums opened. Registration pending

76

* As of Dec 31, 1943

In the last year the number of hospitals in the United States showed a net increase of 310. As one would expect, the largest gain occurred in the federal group, which now consists of 827 hospitals as compared with 474 in 1942. The other governmental groups gained 7 hospitals and the nonprofit organizations 30. The number of proprietary hospitals, however, was reduced by 80.

From 1909 to 1940 inclusive the average annual increase in hospital beds was approximately 26,000. The year 1941 showed an increase of 98,136 beds, while the next year added 59,446. There are now 265,427 more beds and 5,686 more bassinets than were reported in 1942. This recent growth is the equivalent of a new 727 bed hospital for each day of the year.

The expansion of bed capacity is almost entirely related to federal hospitals, which now have 476,673

federal group, which admitted 2,356,885 more patients in 1943 than in 1942. The general hospitals, it should be noted, had 14,454,638 admissions, or 94 per cent of all patients admitted to the registered hospitals, in 1943. One person every two seconds was the rate at which patients entered hospitals in the United States last year. In the same annual period 11.6 per cent of the entire population (1940 U. S. census) received inpatient hospital care.

The daily patient load or average census for all hospitals was 1,257,124 exclusive of newborn infants. This represents a total of 458,850,260 patient days of hospital service in 1943, an increase of 47,850,040 over the 1942 period. Comparative data for 1941, 1942 and 1943 showing the percentage of beds occupied in the various groups of registered hospitals, as well as the average length of stay per patient in the general hospitals, will be found in a subsequent section of this report.

Hospital births totaled 1,924,591 as compared with 1,670,599 in 1942 and 708,889 in 1931. In 1943, therefore, the hospital birth rate may be represented as one live baby every 16.3 seconds.

Schools of nursing education accredited by state boards of nurse examiners number 1,411. These, however, do not include training schools classified as tentatively approved. The student enrolment was reported as 110,222. In 1942 there were 1,439 accredited schools with 98,166 student nurses in training.

A new feature introduced in the present report is a study of hospital facilities for contagious diseases. This survey, which will be discussed at greater length later in the article, reveals that 1,649 hospitals provide 39,282 beds for this purpose. These facilities are in addition to 8,313 beds available in 55 isolation hospitals.

Special attention is called to tables 1 and 2, which give detailed information regarding hospitals in each state, bed capacity, number of bassinets, admissions and average daily census classified by control and type of service respectively. Each table, it should be noted, contains a further summary of the corresponding reports of the previous fifteen years.

Summary of Growth of Hospitals, 1909 to 1943

Year	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
	Num-ber	Capac-ity	Num-ber	Capac-ity	Num-ber	Capac-ity	Num-ber	Capac-ity
1909	71	8,827	212	189,019	4,056	221,189	1,359	121,165
1914	91	12,692	291	232,814	4,650	287,045	3,067	532,181
1918	110	18,815	303	262,254	4,910	321,182	5,323	612,251
1923	220	53,849	611	512,308	6,009	199,645	6,840	775,722
1928	294	61,765	595	369,779	5,963	161,410	6,852	892,954
1931	291	69,170	576	419,282	5,716	185,661	6,613	974,115
1932	301	71,151	568	412,001	5,693	197,662	6,562	1,011,154
1933	295	75,635	557	459,646	5,585	191,765	6,437	1,027,046
1934	313	77,865	544	473,015	5,477	197,201	6,334	1,048,101
1935	316	81,351	526	481,994	5,404	207,792	6,246	1,075,139
1936	321	81,234	521	501,306	5,312	209,181	6,159	1,096,721
1937	329	97,951	522	508,913	5,277	217,681	6,128	1,124,545
1938	330	92,248	521	511,279	5,113	227,851	6,165	1,161,380
1939	329	97,138	523	569,575	5,374	238,113	6,226	1,195,026
1940	336	108,928	521	572,079	5,434	245,258	6,291	1,226,265
1941	428	179,202	530	600,120	5,400	244,559	6,358	1,323,881
1942	474	220,938	530	606,117	5,311	256,152	6,315	1,383,227
1943	827	476,673	531	610,115	5,297	262,166	6,655	1,649,254

Reference should also be made to the section on technical schools, which describes the work of the Council in relation to the approval and listing of schools for occupational therapy technicians, physical therapy technicians, clinical laboratory technicians, x-ray technicians and medical record librarians.

ACKNOWLEDGMENT

Special acknowledgment and appreciation is extended to the Surgeons General of the Army, Navy and Public Health Service, the great numbers of hospital administrators, assistants, chiefs and members of staffs, directors of technical schools, and other officials and personnel who have given their full cooperation in supplying the vast amount of information that has made possible the preparation of statistical data and lists as published in this issue.

When it is realized that reports were received from nearly 99 per cent of all registered hospitals, the extent of this cooperation and support becomes readily apparent.

It is especially gratifying that even under present conditions most hospitals were able to respond promptly and with complete information as required for the preparation of hospital lists and statistical reports.

METHOD AND SCOPE OF SURVEY

Four years ago the American Medical Association and the American College of Surgeons established a cooperative plan whereby the annual hospital questionnaires of the two organizations were combined into a single form. This method, which serves to unify reports and eliminate duplication of effort, has been welcomed by hospital administrators everywhere. To the hospitals registered by the Council and approved by the American College of Surgeons the annual census blanks are furnished in triplicate so that one copy can be returned to each organization while the hospital itself retains a copy for its own files. A similar blank is forwarded in duplicate to all other registered hospitals with the request that one copy be retained by the hospital while the other is returned directly to the American Medical Association. When these reports are received they are checked for completeness and accuracy, and follow-up studies are made if necessary to obtain full information as required for tabulation purposes and the preparation of the annual hospital list. Later the information is transferred to permanent file cards, from which the tabulations and lists are subsequently prepared.

It has been customary for many years for the hospitals approved for intern and residency training to supply their reports on an annual basis covering the calendar year immediately preceding the publication of the March Hospital Number. The other hospitals as a rule report earlier, usually for the twelve months period ended September 30. The need for a uniform census period has been recognized, and if possible this procedure will be established in connection with the next annual survey. It is hoped that the blanks for the intern and residency hospitals can be forwarded at an earlier date so that these institutions may have more time in which to prepare their reports.

While the American Medical Association and the American College of Surgeons cooperate in many activities relating to hospital standardization and service, each organization naturally maintains its own standards for approval, its own inspection service and lists of approved hospitals. In this connection it may be well to clarify some of the terms that are commonly employed in relation to hospital standardization programs. Registration is a basic recognition extended by the American Medical Association to hospitals and related institutions in accordance with the requirements described in the Essentials of a Registered Hospital as officially adopted by the House of Delegates of the American Medical Association in 1928 and revised in 1939. Registration is also concerned with the listing of hospitals in the Annual Hospital Number of THE JOURNAL and in the American Medical Directory. It should be noted that registration is a prerequisite for internship and residency approval.

Approval of hospitals by the Council means specific endorsement of a hospital's educational service in relation to intern or residency training. Recognition of this type is extended in accordance with the requirements outlined in the Essentials of an Approved Internship or the Essentials of Approved Residencies and Fellowships.

The term approved, as used by the American College of Surgeons, may be applied to those registered hospitals that meet the minimum standards of the College.

In the list of registered hospitals the approval of the Council for intern training is shown by a star (*), while approval of residencies in specialties is designated by a plus (+) sign. Approval by the American College of Surgeons is shown by the delta (Δ) and approval by state boards of nurse examiners by the diamond (\diamond) symbol.

In the survey of 1943 the annual census blanks were forwarded to 6,655 registered hospitals, including 2,678 approved by the American College of Surgeons. The Army, the Navy and the Public Health Service and other federal hospitals in the United States are also represented with exceptionally complete information in all groups. These reports are included in the various tabulations that appear in the present Hospital Number. Many of the new federal hospitals, however, are not shown in the published list and therefore any totals obtained from the list directly may vary from the totals that appear in tables 1 and 2.

Annual census blanks were also forwarded to 130 registered hospitals in Alaska, Canal Zone, Hawaii, Puerto Rico and Virgin Islands. These institutions are not included in the tabular data but are fully represented in the list of hospitals and sanatoriums.

During the last year 456 new institutions were admitted to the Hospital Register, whereas 146 were closed or transferred to the unclassified file. At present there are seventy-six applications pending in relation to hospital registration. There is a group of 523 hospitals which, according to information received, do not maintain a service in accordance with the requirements outlined in the general standards of the Council. These hospitals have only 15,215 beds, or less than 1 per cent of the total capacity of all hospitals. Certain other facilities are also omitted from the Register, namely clinics, emergency stations, offices, and so on, where bed care may be available as occasions demand. Many of these unclassified units constitute valuable auxiliary facilities in a community, even though their capacity may be limited to only a few beds.

Hospitals seeking registration should apply to the Council on Medical Education and Hospitals, American Medical Association, 535 North Dearborn Street, Chicago 10.

GOVERNMENTAL HOSPITALS

The classification of governmental hospitals includes hospitals operated by the various branches of the federal government, and those under state, county, municipal and city-county ownership and control. The most significant change in this group since 1942 is the large increase in federal hospital service in relation to war-time needs. The number of federal hospitals, for example, increased from 474 to 827, the admissions from 1,675,722 to 4,032,607 and the average daily census from 147,094 to 268,746.

Reference to table 1 will show that there have been relatively few changes in the state, county, city and city-county hospitals. They remained practically stationary in numbers, having gained only 6 hospitals in the county classification and 1 in the state group. All showed slight increases in bed capacity except the municipal hospitals, which decreased from 79,252 to 77,879 beds. In view of the improved economic conditions it could be expected that a reduction in hospital admissions would occur in these institutions. The state hospitals showed a decrease of 58,223 patients, the county hospitals of 24,684 and the municipal hospitals of 57,059. The city-county hospitals, however, reported

an increase of 36,233 admissions. Although fewer admissions were recorded, it should be noted that the average daily census increased in all groups except the hospitals under city control.

The governmental hospitals as a group increased from 1,924 to 2,284 in the last year, the beds from 1,015,781 to 1,276,139, admissions from 4,009,675 to 6,262,827 and the average census from 858,638 to 983,732. These

Summary of Hospital Service in the United States According to Type of Service and Agencies Concerned from the 1943 Census of Hospitals Registered by the American Medical Association

U S Totals	6,655	1,649,254	1,257,124	77,134	1,924,591	15,374,678
Type	Hospitals	Beds	Average Census	Basinsets	Births	Admissions
Federal						
Totals	827	476,673	268,746	2,396	29,934	4,026,97
General	748	422,226	221,727	2,378	29,890	3,984,97
N & M	32	44,896	41,981	4	3	21,216
TB	16	4,257	3,523	2	14	7,032
Special	10	4,220	1,333	4	14	6,141
Institutions	21	1,061	586	8	10	13,223
State						
Totals	531	610,115	571,576	1,623	31,796	543,258
General	69	20,710	14,707	1,378	31,079	296,815
N & M	269	554,334	530,825	163	298	125,116
TB	74	24,681	20,599	5	27	24,623
Special	20	3,402	2,395	27	266	14,77
Institutions	108	6,088	6,050	45	156	82,27
County						
Totals	511	100,151	77,789	3,763	73,194	581,706
General	240	42,266	27,344	3,227	65,795	511,922
N & M	51	27,147	25,790	6	20	12,418
TB	184	23,946	19,698	20	18	23,291
Special	14	1,900	1,144	408	7,258	18,266
Institutions	22	4,834	3,813	2	3	15,476
City						
Totals	354	77,879	57,818	5,215	119,016	912,628
General	261	48,665	35,547	4,094	118,067	871,720
N & M	4	4,707	4,529	6	2	1,461
TB	28	12,256	10,049	84	947	17,765
Special	51	8,114	4,101	31	10	41,156
Institutions	10	4,047	3,622			8,826
City County						
Totals	61	11,321	7,777	842	19,751	162,628
General	59	7,734	4,918	836	19,750	156,56
N & M						
TB	15	2,249	1,874			2,395
Special	4	349	184	6	1	2,227
Institutions	2	963	797			1,740
Church						
Totals	1,004	190,488	101,170	24,007	636,967	7,501,6
General	877	118,716	91,64	22,607	666,284	6,417,29
N & M	17	3,342	3,099			4,828
TB	20	2,546	2,146			4,677
Special	87	5,798	4,219	1,390	20,08	59,091
Institutions	3	86	43	1		609
Nonprofit						
Totals	1,952	192,219	140,095	40,711	295,184	4,456,271
General	1,544	155,884	111,908	29,066	266,222	4,124,121
N & M	39	7,652	6,608			17,704
TB	80	7,857	5,779	1		8,878
Special	253	20,790	14,56	1,666	27,999	289,749
Institutions	36	2,26	1,69			1,669
Individual and Partnership						
Totals	1,031	27,314	16,282	5,570	116,144	68,999
General	844	20,717	11,26	5,020	108,826	57,812
N & M	88	3,953	3,019			12,654
TB	2	942	70			1,0
Special	76	1,900	1,277	59	7,18	21,80
Institutions						
Corporations						
Totals	24	2,094	15,865	3,187	82,205	217,292
General	27	15,828	10,614	3,104	81,28	471,96
N & M	77	4,852	721	26	661	17,0
TB	15	1,126	674			1,65
Special	21	1,268	746	57	1,216	21,81
Institutions						

hospitals have 77 per cent of the total bed capacity; they received 40 per cent of the hospital admissions reported last year.

NONGOVERNMENTAL HOSPITALS

The nongovernmental hospitals may be divided into two general groups, the nonprofit organizations shown in table 1, section B, and the proprietary hospitals, included in section C of the same table. The nonprofit organizations comprise the church related hospitals and other nonprofit associations, while the proprietary group contains individual and partnership hospitals and corporations unrestricted as to profit.

TABLE 1.—HOSPITAL FACILITIES BY STATE AND BY CONTROL: A. GOVERNMENT HOSPITALS

Marginal No.		Federal				State				County				City				City County				Total Governmental				
		Hospitals	Beds	Businesses	Patients	Average	Hospitals	Beds	Businesses	Patients	Average	Hospitals	Beds	Businesses	Patients	Average	Hospitals	Beds	Businesses	Patients	Average	Hospitals	Beds	Businesses	Patients	Average
1	Alabama	18	11,277	40	94,123	6,638	7	6,328	6	6,877	6,479	7	6,328	6	6,877	6,479	7	6,328	6	6,877	6,479	7	6,328	6	6,877	6,479
2	Arizona	28	5,615	90	42,027	2,319	4	1,154	25	6,822	6,690	4	1,154	25	6,822	6,690	4	1,154	25	6,822	6,690	4	1,154	25	6,822	6,690
3	Arkansas	12	6,912	41	42,181	1,258	4	6,018	25	6,822	6,690	4	6,018	25	6,822	6,690	4	6,018	25	6,822	6,690	4	6,018	25	6,822	6,690
4	California	78	53,765	263	424,461	24,687	13	1,024	25	6,822	6,690	13	1,024	25	6,822	6,690	13	1,024	25	6,822	6,690	13	1,024	25	6,822	6,690
5	Colorado	13	10,320	57	104,921	6,647	8	5,691	25	6,822	6,690	8	5,691	25	6,822	6,690	8	5,691	25	6,822	6,690	8	5,691	25	6,822	6,690
6	Connecticut	3	1,031	1	13,662	7.8	14	12,718	7	6,890	2,152	3	1,031	1	13,662	7.8	14	12,718	7	6,890	2,152	3	1,031	1	13,662	7.8
7	Delaware	7	11,569	9	17,154	9,562	3	2,423	7	6,890	2,152	3	2,423	7	6,890	2,152	3	2,423	7	6,890	2,152	3	2,423	7	6,890	2,152
8	Dist of Columbia	46	20,801	190	162,004	9,937	8	6,890	10	7,184	6,476	8	6,890	10	7,184	6,476	8	6,890	10	7,184	6,476	8	6,890	10	7,184	6,476
9	Florida	27	18,799	151	162,316	10,135	4	6,913	25	6,822	6,690	4	6,913	25	6,822	6,690	4	6,913	25	6,822	6,690	4	6,913	25	6,822	6,690
10	Georgia	8	4,374	16	30,784	2,199	4	1,764	25	6,822	6,690	4	1,764	25	6,822	6,690	4	1,764	25	6,822	6,690	4	1,764	25	6,822	6,690
11	Idaho	15	13,410	15	131,875	10,394	21	14,250	62	27,008	10,911	21	14,250	62	27,008	10,911	21	14,250	62	27,008	10,911	21	14,250	62	27,008	10,911
12	Illinois	15	10,612	21	44,734	3,991	18	15,112	62	27,008	10,911	18	15,112	62	27,008	10,911	18	15,112	62	27,008	10,911	18	15,112	62	27,008	10,911
13	Indiana	7	4,148	4	18,664	2,749	11	12,218	9	21,940	11,111	11	12,218	9	21,940	11,111	11	12,218	9	21,940	11,111	11	12,218	9	21,940	11,111
14	Iowa	23	9,213	6	71,578	3,255	11	5,287	28	12,716	7,608	11	5,287	28	12,716	7,608	11	5,287	28	12,716	7,608	11	5,287	28	12,716	7,608
15	Kansas	13	12,787	26	93,489	6,100	8	7,071	22	6,822	6,690	8	7,071	22	6,822	6,690	8	7,071	22	6,822	6,690	8	7,071	22	6,822	6,690
16	Kentucky	19	13,972	17	139,885	8,249	11	11,814	137	9,608	10,013	11	11,814	137	9,608	10,013	11	11,814	137	9,608	10,013	11	11,814	137	9,608	10,013
17	Louisiana	9	1,025	12	85,537	6,109	6	4,113	60	14,141	9,912	6	4,113	60	14,141	9,912	6	4,113	60	14,141	9,912	6	4,113	60	14,141	9,912
18	Maine	12	9,341	12	85,537	6,109	1	10,122	60	14,141	9,912	1	10,122	60	14,141	9,912	1	10,122	60	14,141	9,912	1	10,122	60	14,141	9,912
19	Maryland	13	11,041	9	90,488	7,416	27	14,929	40	14,788	11,940	27	14,929	40	14,788	11,940	27	14,929	40	14,788	11,940	27	14,929	40	14,788	11,940
20	Massachusetts	14	6,192	14	49,671	4,139	19	23,258	79	26,098	20,110	19	23,258	79	26,098	20,110	19	23,258	79	26,098	20,110	19	23,258	79	26,098	20,110
21	Michigan	10	2,673	14	12,590	1,916	17	16,006	44	14,667	15,114	17	16,006	44	14,667	15,114	17	16,006	44	14,667	15,114	17	16,006	44	14,667	15,114
22	Minnesota	18	14,001	29	132,345	6,490	9	5,723	41	14,403	14,970	9	5,723	41	14,403	14,970	9	5,723	41	14,403	14,970	9	5,723	41	14,403	14,970
23	Mississippi	15	10,929	22	106,686	6,149	12	12,907	10	10,720	11,790	12	12,907	10	10,720	11,790	12	12,907	10	10,720	11,790	12	12,907	10	10,720	11,790
24	Missouri	9	1,039	35	9,080	47	2	2,180	2	6,44	2,180	2	2,180	2	6,44	2,180	2	2,180	2	6,44	2,180	2	2,180	2	6,44	2,180
25	Montana	13	2,798	17	23,471	1,267	9	6,915	2	1,859	6,296	9	6,915	2	1,859	6,296	9	6,915	2	1,859	6,296	9	6,915	2	1,859	6,296
26	Nebraska	1	798	19	7,226	274	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180
27	Nevada	1	1,932	14	26,902	892	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180
28	New Hampshire	1	4,921	55	29,611	2,174	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180	1	1,120	2	6,44	2,180
29	New Jersey	9	28,659	111	220,576	17,901	46	101,890	61	29,676	17,901	46	101,890	61	29,676	17,901	46	101,890	61	29,676	17,901	46	101,890	61	29,676	17,901
30	New Mexico	19	16,612	81	152,387	9,411	9	10,100	2	6,44	2,180	9	10,100	2	6,44	2,180	9	10,100	2	6,44	2,180	9	10,100	2	6,44	2,180
31	New York	5	118	28	4,145	204	4	3,314	8	941	1,260	4	3,314	8	941	1,260	4	3,314	8	941	1,260	4	3,314	8	941	1,260
32	North Carolina	9	4,889	9	9,388	9,347	23	29,371	10	21,270	28,019	23	29,371	10	21,270	28,019	23	29,371	10	21,270	28,019	23	29,371	10	21,270	28,019
33	North Dakota	1	1,036	18	76,868	4,414	14	10,650	0	10,679	10,012	14	10,650	0	10,679	10,012	14	10,650	0	10,679	10,012	14	10,650	0	10,679	10,012
34	Ohio	11	10,376	128	76,868	4,414	9	6,314	5	9,206	5,645	9	6,314	5	9,206	5,645	9	6,314	5	9,206	5,645	9	6,314	5	9,206	5,645
35	Oklahoma	14	10,167	35	34,900	2,419	4	6,314	4	6,314	2,419	4	6,314	4	6,314	2,419	4	6,314	4	6,314	2,419	4	6,314	4	6,314	2,419
36	Oregon	1	1,465	15	56,362	6,629	11	47,401	183	14,975	14,915	11	47,401	183	14,975	14,915	11	47,401	183	14,975	14,915	11	47,401	183	14,975	14,915
37	Pennsylvania	13	8,836	87	101,954	3,201	4	3,471	20	2,475	4,915	4	3,471	20	2,475	4,915	4	3,471	20	2,475	4,915	4	3,471	20	2,475	4,915
38	Rhode Island	17	11,825	47	27,949	1,136	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419
39	South Carolina	13	1,825	47	27,949	1,136	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419	9	2,818	4	6,314	2,419
40	South Dakota	77	43,971	124	477,840	22,894	15	19,686	2	20,713	18,047	15	19,686	2	20,713	18,047	15	19,686	2	20,713	18,047	15	19,686	2	20,713	18,047
41	Tennessee	9	4,631	18	56,818	2,992	5	1,622	5	526	1,746	5	1,622	5	526	1,746	5	1,622	5	526	1,746	5	1,622	5	526	1,746
42	Texas	19	19,700	77	211,346	12,661	14	13,516	170	9,411	13,211	14	13,516	170	9,411	13,211	14	13,516	170	9,411	13,211	14	13,516	170	9,411	13,211
43	Utah	0	16,089	76	137,611	8,402	6	8,974	14	6,822	3,580	6	8,974	14	6,822	3,580	6	8,974	14	6,822	3,580	6	8,974	14	6,822	3,580
44	Vermont	7	4,477	21	43,421	1,469	10	3,458	11	16,165	5,691	10	3,458	11	16,165	5,691	10	3,458	11	16,165	5,691	10	3,458	11	16,165	5,691
45	Virginia	5	2,015	20	17,771	2,492	4	1,456	0	2,897	1,110	4	1,456	0	2,897	1,110	4	1,456	0	2,897	1,110	4	1,456	0	2,897	1,110
46	Washington	827	476,673	2,296	4,022,607	268,746	531	610,115	1,621	541,258	571,576	531	610,115	1,621	541,258	571,576	531	610,115	1,621	541,258	571,576	531	610,115	1,621	541,258	571,576
47	West Virginia	474	220,918	1,206	1,675,722	147,094	50	626,417	1,618	601,481	546,457	50	626,417	1,618	601,481	546,457	50	626,417	1,618	601,481	546,457	50	626,417	1,618	601,481	546,457
48	Wisconsin	428	179,202	1,076	1,268,112	118,830	50	600,420	1,712	620,211	501,620	50	600,420	1,712	620,211	501,620	50	600,420	1,712	620,211	501,620	50	600,420	1,712	620,211	501,620
49	Wyoming	336	108,928	1,089	557,117	80,604	221	372,079	1,317	383,274	539,391	221	372,079	1,317	383,2											

The nonprofit group consisting of 2,956 hospitals showed a slight increase in beds, bassinets and average daily census. There was a substantial increase in the number of admissions, however, from 7,463,648 to 7,959,670. While this gain was shared by both the church related hospitals and the other nonprofit associations, the growth was somewhat greater in the church group.

Hospitals which discontinued their service were small and apparently had difficulty in securing sufficient personnel. In some instances the closing of individually owned hospitals became necessary when the physician in charge left to enter military service. The number of hospitals in this classification is now 1,415. Their bed capacity decreased from 51,755 to 50,408, but the bassinets increased by 353. Admissions increased from

TABLE 1—HOSPITAL FACILITIES BY STATES AND BY CONTROL:
B. NONPROFIT ORGANIZATIONS

Marginal No		Church Related (Nonprofit)					Nonprofit Associations					Total Nonprofit					Marginal No
		Hospitals		Bassinets		Patients Admitted	Hospitals		Bassinets		Patients Admitted	Hospitals		Bassinets		Patients Admitted	
		Beds	Average Census	Beds	Average Census		Beds	Average Census	Beds	Average Census		Beds	Average Census	Beds	Average Census		
1	Alabama	10	1,018	199	55,913	677	17	1,321	189	34,340	83	27	2,339	388	70,243	1,540	1
2	Arizona	7	845	121	26,499	638	16	671	92	13,352	72	2	1,516	213	39,851	1,010	12
3	Arkansas	10	1,081	181	9,984	871	1	869	93	16,196	427	2	1,938	240	52,180	1,298	5
4	California	48	6,147	1,289	206,304	5,286	80	7,789	1,208	215,923	6,301	128	13,932	2,497	422,429	11,569	4
5	Colorado	26	2,544	424	66,167	1,982	25	2,891	136	21,060	1,567	51	4,931	860	86,222	3,549	5
6	Connecticut	8	1,722	272	51,619	1,317	41	5,937	1,074	132,930	4,526	49	7,679	1,360	184,549	5,841	6
7	Delaware	1	105	0	2,038	55	8	1,064	161	22,777	682	9	1,119	19	24,415	737	7
8	District of Columbia	4	871	179	1,441	736	10	1,788	376	44,493	1,465	14	2,694	353	75,974	2,221	8
9	Florida	8	1,010	23	6,638	710	5	1,817	328	8,439	992	4	2,872	36	91,097	1,702	9
10	Georgia	7	711	91	23,876	592	26	2,438	378	69,144	1,717	3	1,119	461	92,970	2,309	10
11	Idaho	12	94	215	24,880	660	7	155	55	3,362	100	19	1,089	270	28,442	600	11
12	Illinois	89	1,750	2,436	330,422	10,146	101	10,774	1,989	270,779	7,895	190	24,277	4,425	627,211	18,041	12
13	Indiana	28	4,616	926	1,260,414	4,344	2	1,557	299	48,074	1,060	51	6,191	1,222	180,128	4,494	13
14	Iowa	41	4,262	740	107,656	2,215	21	1,186	286	40,763	766	64	5,448	1,026	138,421	4,018	14
15	Kansas	8	1,477	182	9,146	2,652	27	1,129	171	27,494	626	65	4,696	831	120,610	3,278	15
16	Kentucky	12	1,856	34	55,274	1,461	0	1,777	209	38,400	1,102	42	3,616	511	91,674	2,367	16
17	Louisiana	10	1,690	296	64,261	1,491	18	1,304	164	40,501	958	28	2,044	460	104,764	2,449	17
18	Maine	6	517	4	12,890	391	0	1,026	68	40,550	1,476	76	2,441	462	58,440	1,839	18
19	Maryland	9	2,126	281	9,979	1,802	31	4,310	524	77,731	3,327	40	6,616	803	117,706	5,129	19
20	Massachusetts	16	2,822	517	61,299	2,770	112	11,816	2,089	261,090	8,777	128	14,688	2,666	22,789	11,141	20
21	Michigan	4	3,096	1,204	166,007	4,212	9	8,196	1,508	203,827	3,848	127	11,292	2,717	66,894	10,660	21
22	Minnesota	37	4,118	727	122,947	4,326	67	3,420	786	96,519	2,507	104	7,106	1,511	219,416	5,833	22
23	Mississippi	3	360	60	1,647	281	9	1,595	287	45,199	909	42	1,951	47	60,846	1,194	23
24	Missouri	40	6,120	1,009	136,632	4,210	3	2,901	383	55,312	1,938	7	9,222	1,941	211,964	7,188	24
25	Montana	24	2,021	384	4,031	1,114	8	340	52	7,702	210	12	2,161	6	52,771	1,521	25
26	Nebraska	20	2,387	49	6,660	1,759	9	451	88	12,716	288	34	2,840	527	76,118	2,083	26
27	Nevada	1	71	1	2,440	64	2	60	10	701	23	1	111	20	3,148	89	27
28	New Hampshire	4	4	0	9,401	299	24	1,500	327	37,560	974	28	1,910	400	46,961	1,271	28
29	New Jersey	17	3,340	603	82,004	2,661	76	9,605	1,686	201,220	7,151	9	11,639	2,221	284,724	9,816	29
30	New Mexico	15	912	132	18,031	319	11	415	51	6,104	181	26	1,127	20	24,153	744	30
31	New York	78	12,483	2,022	226,188	9,374	222	14,071	4,623	698,094	25,824	300	46,519	6,641	924,792	31,981	31
32	North Carolina	1	1,227	231	9,671	971	80	5,540	869	167,421	1,828	6	6,777	1,124	202,094	4,769	32
33	North Dakota	2	194	37	52,111	1,707	7	129	61	8,188	205	2	2,376	420	40,511	1,332	33
34	Ohio	43	7,929	1,441	218,272	6,639	95	9,069	1,596	269,538	6,989	135	16,822	3,041	484,810	11,048	34
35	Oklahoma	8	1,041	23	2,397	711	16	981	148	21,008	510	24	2,028	181	59,101	1,261	35
36	Oregon	19	2,477	486	7,919	1,873	12	691	134	11,755	370	31	1,614	670	80,790	2,204	36
37	Pennsylvania	40	6,607	992	170,779	4,857	107	29,114	4,300	611,892	22,177	237	35,171	5,492	712,071	26,714	37
38	Rhode Island	1	460	30	7,910	347	12	1,604	36	37,352	1,290	1	2,641	56	44,312	1,612	38
39	South Carolina	1	487	78	14,811	34	28	1,930	284	43,136	1,104	3	2,417	11	88,168	1,638	39
40	South Dakota	14	1,119	32	27,111	796	12	314	107	14,812	347	26	1,111	11	42,114	1,114	40
41	Tennessee	9	987	198	4,319	815	24	1,933	277	47,411	1,417	2	2,982	47	77,410	2,282	41
42	Texas	48	5,022	970	177,221	3,631	56	2,822	340	76,341	1,637	104	7,881	1,110	231,418	6,290	42
43	Utah	6	971	36	31,907	811	9	350	121	11,874	225	1	1,211	31	4,781	1,010	43
44	Vermont	1	24	47	3,023	594	19	1,901	220	26,411	1,481	22	2,118	177	14,116	1,675	44
45	Virginia	4	1,038	43	10,670	236	45	3,677	582	100,492	2,549	48	4,011	111	110,617	2,791	45
46	Washington	2	2,841	640	90,898	2,211	26	2,066	522	71,895	1,940	49	3,031	1,172	10,779	4,211	46
47	West Virginia	9	1,037	131	27,372	731	15	1,688	174	8,701	1,171	21	2,271	38	6,271	1,921	47
48	Wisconsin	61	7,219	1,127	181,094	5,074	37	2,311	436	116,232	1,621	100	9,134	1,778	281,710	7,271	48
49	Wyoming	2	48	10	948	20	1	17	36	5,715	88	7	221	11	6,038	108	49
50	Totals (1941)	1,001	130,488	24,067	3,503,396	101,150	1,952	192,219	37,311	4,456,274	140,095	2,956	32,707	5,171	7,959,670	241,115	50
51	(1942)	977	126,141	22,262	3,111,111	94,111	1,849	190,150	29,154	4,251,456	141,611	2,926	316,291	5,116	7,101,418	231,111	51
52	(1941)	993	121,331	20,143	2,961,394	90,119	1,917	182,140	26,422	4,011,111	1,247	2,910	315,471	4,967	6,891,418	222,677	52
53	(1940)	995	120,891	18,811	2,618,876	81,007	1,913	177,081	24,978	3,749,974	123,517	2,901	298,430	4,351	6,118,410	210,711	53
54	(1939)	1,001	120,740	18,044	2,482,412	81,984	1,881	172,769	21,711	3,603,488	119,742	2,810	291,481	4,141	6,118,410	210,711	54
55	(1938)	981	119,521	17,701	2,318,796	80,576	1,776	169,980	22,523	3,316,110	117,518	2,757	281,201	3,981	5,818,110	181,411	55
56	(1937)	971	118,281	16,811	2,149,114	79,111	1,718	162,474	21,511	3,201,042	114,508	2,671	277,517	3,811	5,611,111	171,411	56
57	(1936)	961	117,268	16,601	2,386,084	74,011	1,742	162,581	21,238	3,072,708	107,510	2,711	273,811	3,711	5,572,181	161,411	57
58	(1935)	970	117,268	16,601	1,939,081	69,392	1,670	151,010	20,119	2,337,207	98,081	2,640	268,811	3,111	4,477,111	167,610	58
59	(1934)	970	117,268	16,601	1,786,522	63,811	1,676	154,449	20,184	2,277,211	98,216	2,646	261,712	3,111	4,416,711	157,610	59
60	(1933)	984	115,440	16,190	1,711,111	63,411	1,601	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	60
61	(1932)	1,001	117,500	16,111	1,918,211	70,111	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	61
62	(1931)	1,011	116,911	15,861	2,011,111	73,111	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	62
63	(1930)	1,017	116,816	15,611	1,911,111	73,111	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	63
64	(1929)	1,024	115,511	15,011	1,811,111	73,770	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	64
65	(1928)	1,036	114,611	14,190	1,711,111	73,770	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	65
66	(1927)	1,060	108,352	13,190	1,611,111	73,770	1,611	147,500	19,111	2,111,111	91,111	2,511	251,111	3,111	4,111,111	141,111	66

It should be noted that the church related hospitals, 1,004 in number, have 130,488 beds, 3,503,396 annual admissions and an average daily census of 101.150. The other nonprofit associations comprising 1,952 hospitals report 192,219 beds, 4,456,274 admissions and 140.095 average census.

In the proprietary group there has been a net loss of 80 hospitals since the report of 1942. Many of the

1,072,287 to 1,152,201 and the average census from 31.236 to 32.147. The gain in number of admissions was more

These institutions, which number 4,371, have 23 per cent of the total bed capacity in all registered hospitals. They received approximately 60 per cent of the hospital admissions in 1943.

HOSPITALS ACCORDING TO TYPES OF SERVICE

The registered hospitals shown in table 2 have been divided into twelve groups in accordance with the type

bined capacity of 1,649,254 beds, 77,134 bassinets, 15,374,698 annual admissions and 1,257,124 average daily census.

The general hospitals constitute by far the largest group, as evidenced by the report of 850,576 beds, 72,839 bassinets, 14,454,638 admissions and an average census of 529,340. Their bed capacity increased by 256,316 last year, the admissions by 2,820,350 and the

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL:
C. PROPRIETARY

Marginal No.	Individual and Partnership				Corporations (Profit Unrestricted)				Total Proprietary				TOTAL NONGOVERNMENTAL				Marginal No.					
													Totals of Tables 1B and 1C									
	Hospitals	Beds	Bassinets	Patients Admitted	Hospitals	Beds	Bassinets	Patients Admitted	Hospitals	Beds	Bassinets	Patients Admitted	Hospitals	Beds	Bassinets	Patients Admitted						
1	Alabama.....	32	1,115	163	26,112	577	8	323	81	15,249	334	40	1,638	247	41,361	911	67	3,977	635	111,604	2,441	1
2	Arizona.....	6	104	24	1,395	70	3	109	22	2,039	41	6	104	24	1,395	70	29	1,620	237	41,246	1,089	2
3	Arkansas.....	23	612	115	16,286	309	3	109	22	2,039	41	26	721	137	18,325	359	40	2,679	417	70,593	1,648	3
4	California.....	95	3,292	591	82,990	2,359	37	2,225	357	53,391	1,697	133	5,517	948	156,381	4,053	261	19,449	3,445	558,810	15,625	4
5	Colorado.....	21	618	86	7,837	395	3	196	11	1,610	87	24	814	97	9,147	482	75	5,747	637	95,669	4,031	5
6	Connecticut.....	4	82	...	1,539	74	8	518	...	1,062	595	12	630	...	2,601	469	61	8,309	1,306	187,150	6,312	6
7	Delaware.....	1	20	10	102	20	1	15	6	301	8	2	35	16	403	28	11	1,204	209	24,818	765	7
8	Dist. Columbia.....	1	22	...	50	12	1	238	66	8,016	198	2	200	66	8,006	210	16	2,864	621	84,030	2,431	8
9	Florida.....	18	497	91	10,421	216	4	184	33	3,560	97	22	681	127	13,981	343	65	3,553	690	83,078	2,045	9
10	Georgia.....	37	1,069	162	25,810	618	10	398	76	18,558	276	47	1,458	238	44,298	894	80	4,627	707	137,363	3,203	10
11	Idaho.....	11	246	57	6,517	117	3	73	16	1,251	36	14	359	73	7,768	183	33	1,448	343	36,210	843	11
12	Illinois.....	33	957	118	10,726	619	15	1,204	109	15,645	865	48	2,161	227	26,371	1,484	238	26,438	4,632	633,582	19,525	12
13	Indiana.....	17	326	87	11,196	173	8	536	45	12,424	372	25	922	132	23,620	545	76	7,115	1,537	203,748	5,039	13
14	Iowa.....	32	577	168	12,497	323	5	183	28	3,451	121	37	760	196	15,948	444	101	6,208	1,222	154,369	4,462	14
15	Kansas.....	13	251	56	4,813	156	4	169	25	2,773	101	17	411	81	7,556	257	82	5,017	934	128,226	3,535	15
16	Kentucky.....	15	375	57	5,679	184	10	465	66	12,452	250	25	840	123	18,131	464	67	4,476	675	109,805	3,031	16
17	Louisiana.....	22	495	110	16,407	275	9	418	75	14,896	255	31	913	185	31,803	539	59	3,957	645	136,067	2,979	17
18	Maine.....	12	230	88	4,189	129	6	201	40	6,983	153	18	431	128	11,172	282	54	2,874	590	69,612	2,141	18
19	Maryland.....	12	421	22	2,744	338	1	69	20	1,632	32	13	481	42	4,376	370	53	7,117	847	122,032	5,499	19
20	Massachusetts.....	9	210	39	2,428	116	21	969	175	20,699	732	30	1,179	214	23,097	848	158	15,867	2,820	345,486	11,991	20
21	Michigan.....	23	548	114	9,161	314	7	452	...	2,815	362	30	1,009	114	11,976	676	157	14,292	2,826	378,870	10,736	21
22	Minnesota.....	32	530	161	15,521	303	6	911	58	29,311	788	38	1,441	219	44,832	1,091	142	9,044	1,732	264,298	6,824	22
23	Mississippi.....	27	772	146	22,717	421	3	121	19	2,627	62	30	893	165	25,344	483	72	2,848	512	86,190	1,677	23
24	Missouri.....	22	650	182	13,209	352	6	265	49	3,578	167	28	916	231	16,787	519	101	10,139	1,625	228,751	7,707	24
25	Montana.....	8	159	47	3,604	100	3	153	30	3,181	100	11	312	77	7,088	200	43	2,673	513	59,821	1,724	25
26	Nebraska.....	40	629	198	16,097	345	3	155	18	1,325	101	43	784	216	17,422	416	77	3,624	743	93,740	2,529	26
27	Nevada.....	2	84	22	2,240	43	...	...	...	...	...	2	84	22	2,240	43	5	219	47	5,388	132	27
28	New Hampshire.....	...	...	...	...	...	1	100	...	91	65	1	100	...	91	65	29	2,030	400	47,054	1,333	28
29	New Jersey.....	7	140	17	1,526	101	7	424	...	966	300	14	564	17	2,492	401	107	13,623	2,308	286,216	10,217	29
30	New Mexico.....	2	35	13	1,021	16	1	20	3	281	6	3	55	16	1,302	22	29	1,352	219	25,457	756	30
31	New York.....	47	1,548	388	24,939	1,035	37	3,561	626	61,063	2,320	84	5,109	1,014	89,002	3,364	384	51,665	7,659	1,013,784	38,762	31
32	North Carolina.....	24	693	83	15,739	377	9	528	65	10,250	277	33	1,191	148	25,939	654	126	7,968	1,272	228,083	5,423	32
33	North Dakota.....	2	30	12	965	18	1	14	4	250	8	3	44	16	1,215	26	35	2,320	436	61,730	1,551	33
34	Ohio.....	11	387	24	5,136	241	9	540	16	2,503	401	20	927	40	7,639	645	158	17,309	3,085	492,449	13,693	34
35	Oklahoma.....	52	1,413	300	37,626	725	13	487	60	13,424	327	65	1,900	360	51,530	1,053	89	3,928	741	106,465	2,317	35
36	Oregon.....	12	356	61	9,125	221	13	622	91	18,090	395	25	978	155	27,215	616	56	4,142	775	112,903	2,859	36
37	Pennsylvania.....	30	957	117	10,408	677	10	558	92	11,061	416	40	1,515	209	21,469	1,093	277	36,686	5,701	754,140	27,857	37
38	Rhode Island.....	...	...	...	...	...	1	154	47	3,224	124	1	154	47	3,224	124	16	2,218	433	48,486	1,756	38
39	South Carolina.....	9	105	36	8,022	113	1	25	...	181	21	10	220	36	8,203	134	43	2,637	398	76,371	1,792	39
40	South Dakota.....	9	206	43	4,030	129	...	...	...	...	...	9	206	43	4,030	129	35	1,859	375	46,171	1,272	40
41	Tennessee.....	38	954	153	27,390	496	7	229	45	6,421	125	45	1,183	198	33,811	621	78	4,165	673	111,221	2,833	41
42	Texas.....	129	2,678	658	86,287	1,387	37	1,710	281	57,186	1,174	166	4,397	939	143,473	2,561	270	12,242	2,249	397,041	7,851	42
43	Utah.....	5	103	40	2,086	54	...	...	...	...	...	5	103	40	2,086	54	20	1,424	407	45,867	1,094	43
44	Vermont.....	...	...	...	...	...	1	25	...	37	7	1	25	...	37	7	23	2,173	267	31,473	1,682	44
45	Virginia.....	19	700	121	18,645	445	17	1,147	177	36,956	906	36	1,847	298	55,601	1,351	84	5,862	929	166,163	4,146	45
46	Washington.....	22	606	113	15,904	402	4	111	20	2,464	76	26	717	133	18,368	478	75	6,169	1,305	181,161	4,689	46
47	West Virginia.....	13	886	102	25,765	527	21	1,598	192	42,354	935	34	2,484	294	68,119	1,462	58	5,209	623	134,892	3,384	47
48	Wisconsin.....	25	428	123	9,387	238	7	390	32	3,618	302	32	818	155	13,005	540	132	10,372	1,933	264,715	7,897	48
49	Wyoming.....	7	107	46	2,681	62	1	10	8	650	8	8	126	54	3,331	70	15	347	100	10,014	178	49
50	Totals (1943).....	1,031	27,314	5,370	638,099	16,282	384	23,094	3,187	513,202	15,865	1,415	50,408	8,557	1,152,201	32,147	4,371	373,115	63,295	9,111,871	273,392	50
51	(1942).....	1,089	27,990	5,147	576,466	15,715	406	23,759	3,057	495,821	15,521	1,495	51,755	8,204	1,072,287	31,236	4,421	368,046	59,020	8,535,935	267,390	51
52	(1941).....	1,149	28,760	5,054	545,881	16,582	435	24,639	3,018	494,967	15,898	1,584	53,399	8,102	1,040,851	32,489	4,494	358,870	54,669	7,933,586	255,147	52
53	(1940).....	1,174	28,958	4,820	500,040	15,049	449	25,108	3,021	463,654	15,666	1,623	54,066	7,841	963,694	30,735	4,524	352,556	51,380	7,218,544	241,499	53
54	(1939).....	1,190	29,870	4,756	501,860	14,955	456	26,496	2,989	450,759	16,154	1,646	56,375	7,745	958,619	31,109	4,486	349,880	49,160	7,144,869	232,435	54
55	(1938).....	1,188	30,193	4,557	495,553	15,253	493	26,550	3,236	470,136	15,630	1,681	56,743	7,793	965,689	30,885	4,438	346,244	47,636	6,818,795	229,019	55
56	(1937).....	1,183	29,057	4,766	508,359	15,458	530	28,035	3,516	507,077	16,477	1,713	58,042	8,282	1,015,436	31,935	4,406	335,799	46,644	6,711,592	225,556	56
57	(1936).....	1,204	28,496																			

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE (Continued on next page)

Marginal No.	State	General				Nervous and Mental				Tuberculosis				Maternity				Industrial				Eye, Ear, Nose and Throat			
		Hospitals	Bed	Patients Admitted	Average	Hospitals	Bed	Patients Admitted	Average	Hospitals	Bed	Patients Admitted	Average	Hospitals	Bed	Patients Admitted	Average	Hospitals	Bed	Patients Admitted	Average	Hospitals	Bed	Patients Admitted	Average
1	Alabama	14,641	796	2,337	826	8,070	4,427	7,000	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
2	Alaska	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
3	Arizona	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
4	Arkansas	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
5	California	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
6	Colorado	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
7	Connecticut	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
8	Delaware	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
9	District of Columbia	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
10	Florida	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
11	Georgia	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
12	Idaho	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
13	Illinois	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
14	Indiana	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
15	Iowa	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
16	Kansas	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
17	Kentucky	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
18	Louisiana	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
19	Maine	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
20	Maryland	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
21	Massachusetts	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
22	Michigan	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
23	Minnesota	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
24	Mississippi	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
25	Missouri	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
26	Montana	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
27	Nebraska	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
28	Nevada	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
29	New Hampshire	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
30	New Jersey	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
31	New Mexico	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
32	New York	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
33	North Carolina	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
34	North Dakota	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
35	Ohio	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
36	Oklahoma	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
37	Oregon	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
38	Pennsylvania	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
39	Rhode Island	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
40	South Carolina	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
41	South Dakota	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
42	Tennessee	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
43	Texas	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
44	Vermont	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
45	Virginia	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
46	Washington	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
47	West Virginia	6,823	381	1,337	325	1,008	499	967	967	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
48	Wisconsin	6,823	381	1,337	325	1,008	499	967	967	1,008															

TABLE 2.—HOSPITAL FACILITIES BY , ATEs AND BY TYPE OF SERVICE—(Continued)

Marginal No.	General					Special					Grand				
	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average			
1	Alabama.....	1	50	1,330	27	1	15	550	10	1	124	1	1		
2	Arizona.....	1	55	600	62	1	15	375	10	1	124	1	1		
3	Arkansas.....	1	55	600	214	1	15	375	10	1	124	1	1		
4	California.....	3	309	1,330	214	12	188	1,330	10	12	188	10	12		
5	Colorado.....	1	225	1,330	118	1	115	1,330	10	1	115	10	1		
6	Connecticut.....	1	85	1,330	137	1	197	1,330	10	1	197	10	1		
7	Delaware.....	1	220	1,330	131	1	184	1,330	10	1	184	10	1		
8	District of Columbia.....	1	220	1,330	131	1	184	1,330	10	1	184	10	1		
9	Florida.....	1	44	1,036	33	1	184	1,036	10	1	184	10	1		
10	Georgia.....	1	284	3,771	158	1	284	3,771	10	1	284	10	1		
11	Idaho.....	1	284	3,771	158	1	284	3,771	10	1	284	10	1		
12	Illinois.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
13	Indiana.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
14	Iowa.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
15	Kansas.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
16	Kentucky.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
17	Louisiana.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
18	Maine.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
19	Maryland.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
20	Massachusetts.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
21	Michigan.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
22	Minnesota.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
23	Mississippi.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
24	Missouri.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
25	Montana.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
26	Nebraska.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
27	Nevada.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
28	New Hampshire.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
29	New Jersey.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
30	New Mexico.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
31	New York.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
32	North Carolina.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
33	North Dakota.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
34	Ohio.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
35	Oklahoma.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
36	Oregon.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
37	Pennsylvania.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
38	Rhode Island.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
39	South Carolina.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
40	South Dakota.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
41	Tennessee.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
42	Texas.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
43	Utah.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
44	Vermont.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
45	Virginia.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
46	Washington.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
47	West Virginia.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
48	Wisconsin.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
49	Wyoming.....	2	284	3,771	158	2	284	3,771	10	2	284	10	2		
50	Totals (1943).....	40	4,104	84,401	2,705	55	8,313	44,957	3,219	126	12,453	56	11,658		
51	Totals (1942).....	43	4,314	84,729	2,908	52	8,379	45,929	3,011	139	18,532	60	14,565		
52	Totals (1941).....	52	6,067	117,498	4,130	52	6,279	35,929	3,011	101	18,532	10	18,532		
53	Totals (1940).....	46	4,781	92,294	3,263	57	7,350	25,304	2,776	219	27,037	118	171,335		
54	Totals (1939).....	45	5,151	93,137	3,264	60	7,100	36,341	2,918	232	25,011	10	10,011		
55	Totals (1938).....	52	5,410	115	93,420	3,761	64	6,145	37,317	2,511	121	15,816	12	15,816	
56	Totals (1937).....	52	5,389	111	89,584	3,714	64	6,157	37,317	2,511	121	15,816	12	15,816	
57	Totals (1936).....	52	5,279	110	89,916	3,412	64	6,806	37,317	2,511	121	15,816	12	15,816	
58	Totals (1935).....	51	4,874	118	89,015	3,115	69	6,394	40,700	2,301	135	16,393	13	16,393	
59	Totals (1934).....	58	5,356	146	97,371	3,629	71	7,450	45,384	2,904	125	15,489	13	15,489	
60	Totals (1933).....	58	5,456	136	90,307	3,618	71	7,659	46,040	2,904	130	16,580	13	16,580	
61	Totals (1932).....	58	5,323	172	89,166	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	
62	Totals (1931).....	62	5,403	278	89,416	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	
63	Totals (1930).....	62	5,403	278	89,416	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	
64	Totals (1929).....	62	5,403	278	89,416	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	
65	Totals (1928).....	65	5,403	278	89,416	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	
66	Totals (1927).....	65	5,403	278	89,416	3,629	69	6,401	47,314	2,874	133	16,827	13	16,827	

last year and from 1,632,368 admissions to 3,984,895. Significantly, the downward trend continues in the tuberculosis group, which had 91,674 admissions last year as compared with 101,526 in 1942. Relatively few changes were noted in other classifications, however, but reference should be made to table 2, in which comparative data are available in relation to previous reports.

PERCENTAGE OF BEDS OCCUPIED

Comparative reports for 1941, 1942 and 1943 are included in the table showing occupancy rates in hospitals classified by control and according to type of service. It may be noted first of all that the average bed occupancy for all hospitals was 76.2 per cent in 1943 as compared with 81.4 per cent in 1942. This reduction in the face of a greatly increased admission rate may be accounted for in part by a shorter length of stay, but under present conditions it is more likely

Percentage of Beds Occupied

	1941	1942	1943
According to Ownership or Control:			
Federal.....	66.3	66.6	56.4
State.....	91.6	91.4	93.7
County.....	84.7	77.7	77.7
City.....	78.2	76.9	74.3
City-county.....	73.7	70.5	68.7
Total nonproft.....	86.2	84.5	77.1
Church.....	73.1	74.9	77.5
Nonprofit associations.....	72.7	74.5	72.9
Total nonprofit.....	73.2	74.7	74.8
Individual and partnership.....	57.7	56.1	59.6
Corporations (profit unrestricted).....	61.5	65.3	68.7
Total proprietary.....	63.8	66.4	69.8
Total nongovernmental.....	71.4	72.7	73.3
According to Type of Service:			
General.....	63.2	68.2	62.2
Nervous and mental.....	91.5	91.4	93.2
Tuberculosis.....	85.7	83.0	81.8
Children's.....	67.3	70.7	61.2
Other.....	70.2	55.5	59.5
Children's.....	65.1	61.4	54.6
Other.....	77.1	75.4	71.5
Children's.....	32.0	31.2	38.7
Other.....	82.7	82.1	65.0
Other.....	76.2	66.4	63.7
All other hospitals.....	85.6	81.1	88.8
Total all hospitals.....	82.1	81.4	76.2

that the rapid expansion of general hospital facilities in the federal group is the principal factor involved.

In support of this view may be cited the pronounced decrease in federal occupancy rates from 66.6 to 56.4 per cent in the last year and a similar reduction in the general hospital classification from 68.2 per cent to 62.2. Many of the new hospitals have been established in relation to future needs, and therefore the occupancy rate has not always kept pace with the number of beds available. In this connection it should be noted that several of the newly established hospitals have been included in this report with only the bed capacity available for tabulation purposes.

The fact that city and city-county hospitals showed a continued reduction in bed occupancy is in keeping with the improved economic conditions of the country. In the nongovernmental group the church related hospitals showed an increase over the previous year, while the other nonprofit hospitals had an average occupancy of 72.9 per cent as compared with 74.5 in 1942. In tuberculosis hospitals there has been a further decrease in bed occupancy, while in the nervous and mental institutions an increase may be noted. The occupancy in industrial hospitals has increased from 55.5 per cent in 1942 to 59.5 per cent in 1943. As would be expected, the lowest occupancy rate, 38.7 per cent, occurs in iso-

lation hospitals, where bed reserves are usually maintained to meet seasonal demands.

As regards the average length of stay in general hospitals, it may be noted that a reduction of two days occurred in the federal group, two days in state hospitals and one day in the city-county institutions. In other

Average Length of Stay per Patient in General Hospitals, 1941, 1942 and 1943

	1941	1942	1943
According to Ownership or Control:			
Federal.....	21 days	22 days	20 days
State.....	18 days	20 days	18 days
County.....	18 days	19 days	19 days
City.....	15 days	15 days	15 days
City-county.....	12 days	12 days	11 days
All governmental general.....	15 days	19 days	19 days
Church.....	10 days	10 days	10 days
Other nonprofit associations.....	10 days	10 days	10 days
All nonprofit general.....	10 days	10 days	10 days
Individual and partnership.....	8 days	7 days	7 days
Corporations (profit unrestricted).....	8 days	8 days	8 days
All proprietary general.....	8 days	8 days	8 days
All nongovernmental general.....	10 days	10 days	10 days
All general hospitals.....	12 days	13 days	11 days

groups the average length of stay was identical with the 1942 report. The accompanying table shows the following length of stay in general hospitals: governmental nineteen days, all nonprofit associations ten days, proprietary hospitals eight days. This indicates an average of thirteen days for the general hospitals as a group.

BIRTHS IN HOSPITALS

Use of hospital facilities for maternity care continues to increase, as evidenced by the report of 1,924,591 hospital births in 1943 as compared with 1,670,599 in 1942 and 621,896 in 1929. The governmental hos-

Births in Hospitals According to Ownership or Control and According to Type of Service

	1929	1941	1942	1943
According to Ownership or Control:				
Federal.....	2,296	11,811	15,157	29,534
State.....	9,125	32,113	31,573	31,766
County.....	17,527	66,609	69,891	73,194
City.....	45,787	112,062	118,001	119,000
City-county.....	8,866	15,497	15,005	19,751
Total governmental.....	84,511	239,072	259,529	273,691
Church.....	209,726	463,111	505,070	656,267
Fraternals.....	1,750	.....	.....	.....
Nonprofit associations.....	4,327	561,844	65,262	795,184
Industrial.....	28,426	.....	.....	.....
Independent.....	.....	.....	.....	.....
Total nonprofit.....	.....	1,021,975	1,264,231	1,451,551
Individual and partnership.....	59,459	79,754	91,879	116,144
Corporations (profit unrestricted).....	.....	61,179	65,600	83,295
Total proprietary.....	.....	140,933	157,479	199,439
Total nongovernmental.....	.....	1,162,908	1,421,709	1,650,990
According to Type of Service:				
General.....	566,177	1,312,195	1,607,216	1,767,291
Maternity.....	51,019	51,184	63,600	66,112
Children's.....	802	7,966	.....	.....
Hospital departments of institutions.....	277	.....	253	172
All other hospitals.....	1,794	2,947	2,121	2,913
Total births in all hospitals.....	621,896	1,424,299	1,779,196	1,924,591

pitals reported 273,691 births last year, church hospitals 656,367, other nonprofit associations 795,184 and the proprietary hospitals 199,349. More than 96 per cent of the births reported in 1943 were in general hospitals, while 3.4 per cent occurred in maternity hospitals. It is of further interest to note that the nongovernmental hospitals had 85 per cent of the births, the governmental group 15 per cent. Attention is called to the table

showing births in hospitals classified according to control and type of service. Comparative data are given for the years 1929, 1941, 1942 and 1943. The distribution of bassinets in the various types of hospitals is given in tables 1 and 2.

ADMINISTRATIVE PERSONNEL

In the present survey information was again obtained regarding the administrative supervision of hospitals by physicians, nurses or other hospital superintendents. From reports available on 6,655 registered hospitals it has been ascertained that physicians serve as administrators or superintendents in 2,654 hospitals, registered

number of orderlies, however, increased by 5,283 and the personnel has been further augmented by 34,801 nurses' aides and 13,167 additional graduates not listed in previous reports. Reference should be made to the table giving further information on administrative and nursing personnel and schools of nursing.

SCHOOLS OF NURSING EDUCATION

Schools of nursing education accredited by the respective state boards of nurse examiners now total 1,411 as compared with 1,439 in 1942. Schools that have been classified as tentatively approved are not included in this report. For many years there has been a decrease

ADMINISTRATIVE AND NURSING PERSONNEL AND SCHOOLS OF NURSING

	Hos- pitals	Administrator or Superintendent			State Accredited Schools of Nursing	Student Nurses	Graduate Nurses Employed at Nursing	Other Grad- uate Nurses	Prac- tical Nurses	Nurses' Aides	Atten- dants	Order- lies
		M. D.	R. N.	Other								
Alabama .. .	107	52	43	12	24	1,128	1,201	212	209	317	1,532	752
Arizona .. .	67	43	6	18	4	295	733	29	36	303	369	303
Arkansas .. .	70	35	17	18	0	523	694	36	338	276	998	560
California .. .	417	175	126	116	45	3,683	11,192	799	947	2,082	9,699	1,769
Colorado .. .	101	37	27	40	19	1,338	7,614	163	349	389	1,501	1,017
Connecticut .. .	81	38	22	21	23	2,111	2,031	356	185	858	1,251	493
Delaware .. .	19	10	6	3	7	451	225	31	37	64	107	59
District of Columbia .. .	28	14	6	8	8	1,089	1,322	74	111	718	962	673
Florida .. .	179	70	44	25	13	923	2,345	102	295	404	1,591	1,316
Georgia .. .	134	75	31	25	15	1,561	1,738	169	275	301	2,420	1,267
Idaho .. .	50	20	20	10	8	457	536	207	37	100	776	16
Illinois .. .	311	95	117	91	105	7,925	6,409	1,064	782	2,252	6,047	743
Indiana .. .	147	53	67	37	29	2,625	1,971	219	483	670	1,244	204
Iowa .. .	141	56	71	31	32	2,672	1,385	214	257	519	828	267
Kansas .. .	132	50	65	17	6	1,883	1,246	141	128	433	575	625
Kentucky .. .	100	47	29	24	17	1,202	1,227	103	369	386	1,121	637
Louisiana .. .	90	58	20	12	16	1,714	1,609	126	195	474	1,633	973
Maine .. .	72	25	40	7	18	1,022	655	139	91	162	359	68
Maryland .. .	85	43	28	14	26	2,078	1,790	227	335	505	2,663	719
Massachusetts .. .	24	91	95	46	74	6,240	5,008	677	319	2,216	3,608	1,101
Michigan .. .	258	99	106	62	42	4,060	4,516	554	503	2,077	3,273	1,437
Minnesota .. .	212	83	88	41	31	3,652	2,292	414	608	994	1,255	267
Mississippi .. .	105	70	27	8	31	606	1,111	71	108	185	1,211	300
Missouri .. .	151	59	49	43	33	2,708	2,511	363	564	848	3,054	1,113
Montana .. .	60	21	25	14	15	793	514	48	85	180	171	30
Nebraska .. .	107	40	44	21	14	1,232	901	74	198	369	549	98
Nevada .. .	20	11	3	6	...	...	171	11	15	37	103	51
New Hampshire .. .	43	9	26	8	14	727	581	90	37	192	500	101
New Jersey .. .	168	55	59	74	47	3,917	3,465	507	511	1,085	2,114	900
New Mexico .. .	63	31	16	11	2	74	489	14	73	94	729	196
New York .. .	556	207	180	119	122	11,192	16,066	1,772	3,161	4,614	14,693	2,583
North Carolina .. .	178	64	61	51	45	2,307	2,212	223	718	664	1,484	1,491
North Dakota .. .	48	9	25	14	16	1,015	384	58	44	131	280	19
Ohio .. .	236	73	74	89	67	6,667	4,755	920	592	2,043	2,583	591
Oklahoma .. .	143	63	42	5	13	63	1,100	71	315	245	1,160	476
Oregon .. .	80	19	37	24	13	1,035	1,197	194	184	272	609	116
Pennsylvania .. .	356	116	92	148	131	11,366	7,543	1,044	536	2,669	4,628	1,675
Rhode Island .. .	21	12	5	7	9	723	534	133	51	97	566	72
South Carolina .. .	75	39	15	21	16	1,122	1,214	65	89	251	869	414
South Dakota .. .	56	19	25	12	12	692	435	43	38	161	201	17
Tennessee .. .	110	63	26	30	20	1,731	1,346	99	349	435	1,203	691
Texas .. .	406	191	132	83	42	3,679	4,404	355	975	952	4,769	1,967
Utah .. .	39	20	9	10	6	661	593	69	53	223	467	348
Vermont .. .	30	9	18	3	10	475	248	80	60	62	204	10
Virginia .. .	123	61	37	25	30	1,965	2,602	211	336	681	3,264	829
Washington .. .	127	52	49	26	32	2,015	2,481	222	253	447	1,011	1,252
West Virginia .. .	79	11	22	16	30	1,512	822	106	124	493	533	312
Wisconsin .. .	222	43	84	95	29	2,409	2,602	282	742	1,170	1,926	206
Wyoming .. .	28	12	9	7	2	51	268	6	29	51	209	83
Totals (1943) .. .	6,655	2,654	2,258	1,743	1,411	110,222	113,424	13,167	17,309	34,801	92,427	31,140
Totals (1942) .. .	6,315	2,280	2,267	1,798	1,439	98,166	120,114	.....	22,161	..	94,133	29,807

nurses in 2,258 and other persons in 1,743. There has been a decrease of 9 nurse superintendents since the report of 1942, while the classification of physician superintendents shows a gain of 374. This corresponds closely to the increase of 353 hospitals noted in the federal group.

NURSING PERSONNEL

Reports received in the 1943 survey show that the registered hospitals employ 113,424 graduate nurses on nursing service, 13,167 other graduate nurses, 17,309 practical nurses, 34,801 nurses' aides, 92,427 attendants and 31,140 orderlies. When compared with the 1942 report it is apparent that the number of graduate nurses employed for nursing service has decreased by 6,690, practical nurses by 4,852 and attendants by 1,706. The

in the number of schools of nursing, yet the number of students enrolled has steadily increased. The present report gives a total of 110,222 student nurses, an increase of 12,056 over 1942.

In the listing of accredited schools in the Hospital Register, two symbols are employed to differentiate between institutions conducting schools and those which supply training on an affiliated basis. The circular symbol (○) refers to hospitals which provide acceptable supplementary training in a limited field as, for example, pediatrics, psychiatry, tuberculosis or contagious diseases. The diamond symbol (◊), however, is applied to accredited schools of nursing operated by hospitals individually or under joint hospital and college or university sponsorship.

TECHNICAL PERSONNEL IN HOSPITALS

Information on technical personnel was first published in *THE JOURNAL*, March 27, 1937. More complete data, however, were obtained in 1941, when additional groups were included to supply a full report on laboratory, x-ray, physical therapy and occupational therapy technicians, dietitians, pharmacists, medical record librarians, other librarians, medical stenographers, dental hygienists and social service workers. Data were presented in *THE JOURNAL*, March 28, 1942, showing both

1,883 full time and 351 part time technicians, while dental hygienists total 1,574 and 524 respectively. Social service workers include 3,996 on full time and 3,147 on part time, nurse anesthetists 3,609 and 1,242.

Reference to the accompanying table on technical personnel will show that there has been a definite increase in most of these groups in the last year. Since many of these changes are related to the expansion of federal hospital services, comparative totals have been included in the tabular data.

TECHNICAL PERSONNEL IN ALL HOSPITALS—1943

	Laboratory Technicians		X-Ray Technicians		Dietitians		Physical Therapists		Pharmacists		Medical Record Librarians		Other Librarians		Medical Stenographers		Occupational Therapists		Dental Hygienists		Social Service Workers		Nurse Anesthetists	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Alabama.....	184	33	133	42	84	11	29	6	45	11	59	24	8	2	131	20	18	3	32	1	49	59	57	48
Arizona.....	102	12	64	11	30	8	21	3	37	1	38	9	6	6	62	14	9	3	37	6	13	68	4	12
Arkansas.....	132	34	90	48	44	10	22	4	40	25	32	14	7	10	69	27	9	1	19	7	13	1	39	16
California.....	1,065	149	631	109	382	35	317	70	340	69	295	61	94	39	708	47	100	20	202	27	329	363	190	41
Colorado.....	176	45	124	44	88	8	54	23	58	10	55	20	15	8	153	27	25	5	20	12	42	117	40	12
Connecticut.....	182	24	120	16	120	7	38	13	47	16	67	14	10	10	134	23	72	11	12	12	54	7	76	7
Delaware.....	33	1	17	5	19	..	9	..	8	4	13	6	1	2	25	3	9	3	3	2	9	4	8	1
Dist. of Columbia.....	115	6	51	3	80	2	32	4	36	1	31	9	13	3	100	4	29	2	11	..	65	111	18	1
Florida.....	474	36	250	37	100	12	50	20	163	5	122	24	12	9	273	13	25	3	164	6	71	166	67	27
Georgia.....	331	46	212	53	138	12	42	17	80	15	68	24	42	10	245	24	24	2	37	5	58	91	84	25
Idaho.....	50	10	41	6	17	6	6	2	13	1	16	4	2	2	18	2	2	1	3	2	8	1	16	14
Illinois.....	763	111	450	78	363	25	166	37	196	26	238	66	54	37	361	52	155	63	57	21	191	73	268	69
Indiana.....	232	61	149	44	106	8	46	6	66	7	81	18	22	14	144	25	41	2	20	12	27	93	22	11
Iowa.....	150	42	110	40	88	10	36	9	52	7	63	31	13	10	87	19	24	3	14	5	29	33	42	29
Kansas.....	183	35	125	38	81	13	31	18	57	9	77	33	10	14	176	22	31	24	18	6	48	93	26	19
Kentucky.....	230	39	106	31	84	8	34	3	41	2	60	19	19	10	151	9	20	6	14	13	61	67	24	6
Louisiana.....	247	18	141	26	99	6	41	9	89	10	55	13	72	6	169	12	13	7	22	11	80	104	88	21
Maine.....	70	15	49	17	41	7	20	3	22	1	36	5	4	5	46	10	8	..	8	2	10	21	39	15
Maryland.....	255	26	118	19	169	3	59	12	66	10	57	11	25	5	211	16	48	6	26	16	67	28	41	13
Massachusetts.....	532	67	294	61	317	16	99	30	133	18	168	33	47	28	455	64	132	7	45	16	267	55	90	33
Michigan.....	446	86	265	63	242	27	94	15	100	20	134	60	34	16	312	48	74	4	24	25	135	27	184	42
Minnesota.....	201	70	123	64	121	19	42	21	47	13	59	39	19	10	106	31	33	4	11	10	61	6	131	57
Mississippi.....	214	26	129	30	76	17	17	7	46	2	63	30	5	5	210	26	40	2	17	5	23	64	62	28
Missouri.....	350	73	218	51	164	22	88	25	104	24	114	33	32	8	183	31	34	11	43	17	129	73	64	12
Montana.....	50	17	33	13	25	2	10	4	10	2	24	9	2	3	23	7	1	5	10	5	8	..	24	87
Nebraska.....	95	28	69	20	45	12	18	6	35	6	27	18	5	3	73	20	9	3	19	6	11	2	55	32
Nevada.....	20	4	18	5	6	1	1	3	8	..	12	3	..	1	5	4	..	..	5	..	..	20	4	3
New Hampshire.....	63	23	52	19	35	1	0	7	19	2	32	8	2	1	34	16	11	3	4	2	12	..	7	4
New Jersey.....	393	51	217	29	248	9	109	26	100	25	121	30	31	8	230	28	97	12	28	32	162	62	71	10
New Mexico.....	92	24	57	23	34	5	11	1	40	5	81	10	7	3	54	12	9	2	23	8	15	6	17	11
New York.....	1,515	132	778	130	984	47	477	107	417	53	435	96	145	73	685	96	352	38	118	41	807	387	364	45
North Carolina.....	340	58	207	53	174	27	66	9	72	7	109	29	22	1	385	23	12	5	35	13	71	24	89	49
North Dakota.....	41	16	31	11	16	1	5	6	5	..	18	14	5	4	15	8	3	..	3	3	6	4	25	17
Ohio.....	456	103	256	61	286	39	102	26	108	23	141	41	40	23	239	51	63	10	24	38	119	27	122	4
Oklahoma.....	162	47	132	41	79	17	32	4	37	8	76	19	12	9	176	22	8	4	30	14	27	1	39	11
Oregon.....	114	22	72	18	50	7	20	6	24	4	32	16	6	2	75	18	6	2	12	16	14	8	63	27
Pennsylvania.....	817	85	391	66	463	24	180	51	187	59	288	58	47	31	470	75	120	16	51	22	321	264	321	73
Rhode Island.....	61	9	36	9	35	1	11	8	19	6	29	6	3	2	59	8	10	..	24	1	24	8	5	3
South Carolina.....	195	26	131	25	89	4	24	3	45	5	60	18	8	3	137	12	11	3	21	5	37	25	39	15
South Dakota.....	51	16	35	16	19	5	12	6	8	3	18	13	4	2	29	8	5	1	5	3	8	76	31	26
Tennessee.....	185	51	120	37	108	14	39	10	57	11	61	19	13	7	168	22	15	7	38	7	62	46	61	19
Texas.....	831	136	537	94	280	40	127	27	231	25	315	63	56	14	633	61	45	15	132	18	144	279	195	76
Utah.....	75	7	36	9	29	2	10	1	21	3	31	4	6	3	59	3	2	2	7	4	17	43	23	2
Vermont.....	23	8	16	0	15	4	9	4	6	1	15	4	3	1	18	7	9	1	2	3	1	1	4	4
Virginia.....	321	27	168	27	158	14	75	4	71	11	80	29	23	16	200	47	28	8	48	10	92	99	92	23
Washington.....	224	28	160	26	119	11	60	10	56	20	63	29	17	5	165	27	28	2	52	8	89	57	110	29
West Virginia.....	137	17	83	16	63	7	26	2	10	3	54	8	8	5	112	12	6	..	8	9	14	47	45	17
Wisconsin.....	259	67	164	54	113	23	67	20	63	25	77	44	7	14	148	41	45	17	13	17	41	6	119	79
Wyoming.....	27	6	25	7	16	..	13	1	7	..	9	3	1	1	20	5	7	2	3	..	4	..	7	4
Totals (1943).....	13,349	2,073	7,834	1,783	6,482	609	2,905	719	3,563	605	4,155	1,191	1,079	523	8,816	1,302	1,583	351	1,574	524	3,996	3,147	3,609	1,242
(1942).....	10,971	1,835	6,303	1,604	6,077	557	2,443	772	2,698	533	3,426	1,035	780	524	6,875	1,048	1,727	283	1,631	572	3,618	2,923	3,274	972
(1941).....	9,609	1,676	5,534	1,535	5,548	459	2,305	692	2,382	497	3,065	897	678	461	6,016	899	1,582	350	919	591	2,660	1,225	..	..
Federal Personnel (Included in 1943 Totals).....	4,659	276	2,714	232	1,149	47	1,065	63	1,654	136	1,130	146	335	75	4,265	179	456	106	1,181	52	1,219	2,213	340	177

full time and part time workers in all of these classifications. In 1942 additional information was included regarding nurse anesthetists. In connection with the present annual census, the registered hospitals reported 13,349 laboratory technicians on full time duty and 2,073 on part time, 7,834 x-ray technicians full time and 1,783 part time and 6,482 dietitians full time and 609 part time. Other groups classified as full time and part time respectively show the following numbers: physical therapists 2,905 and 719, pharmacists 3,563 and 605, medical record librarians 4,155 and 1,191, other librarians 1,039 and 523, and medical stenographers 8,816 and 1,202. In occupational therapy there are

A further report on the work of the Council on Medical Education and Hospitals with reference to laboratory technicians, occupational therapists, physical therapists, medical record librarians and lists of approved schools will be found in later pages of this issue. There is also an announcement regarding the activities of the Council relative to the formation of standards and the preparation of lists of acceptable schools for x-ray technicians.

FACILITIES FOR CONTAGIOUS DISEASES

Information regarding isolation hospitals has been included in the surveys of the Council for many years. These reports, as summarized in table 2, show that the

number of hospitals devoted to the care and treatment of contagious diseases has decreased from 98 in 1927 to 55 at the present time. During this period there has also been a reduction in bed capacity from 8,895 to 8,313. The number of beds reported in the last survey, however, shows an increase of 2,034 in comparison with

*Contagious Disease Units Classified by States
(Exclusive of Isolation Hospitals)*

State	Hospitals	Beds	State	Hospitals	Beds
Alabama.....	38	738	Nebraska.....	28	466
Arizona.....	26	361	Nevada.....	9	90
Arkansas.....	22	651	New Hampshire.....	10	350
California.....	97	3,485	New Jersey.....	30	1,019
Colorado.....	24	764	New Mexico.....	33	485
Connecticut.....	18	518	New York.....	111	2,826
Delaware.....	6	67	North Carolina.....	38	963
District of Columbia..	8	401	North Dakota.....	11	51
Florida.....	51	1,101	Ohio.....	42	769
Georgia.....	41	1,119	Oklahoma.....	31	781
Idaho.....	11	331	Oregon.....	23	236
Illinois.....	57	1,774	Pennsylvania.....	69	857
Indiana.....	31	998	Rhode Island.....	5	218
Iowa.....	29	399	South Carolina.....	25	877
Kansas.....	38	610	South Dakota.....	19	213
Kentucky.....	26	825	Tennessee.....	25	479
Louisiana.....	27	1,577	Texas.....	118	3,728
Maine.....	11	157	Utah.....	10	258
Maryland.....	19	401	Vermont.....	9	70
Massachusetts.....	38	1,260	Virginia.....	51	1,571
Michigan.....	47	933	Washington.....	40	1,239
Minnesota.....	41	429	West Virginia.....	18	266
Mississippi.....	25	810	Wisconsin.....	25	353
Missouri.....	28	993	Wyoming.....	12	112
Montana.....	19	139			
			Totals.....	1,619	39,282

the year 1942. Admissions have varied from 30,279 in 1939 to 49,570 in 1943, the latter representing a gain of 11,634 over the previous twelve months period. As regards occupancy rates it can be shown that an average of 36.1 per cent of the beds in these hospitals were occupied in 1929, 41.8 per cent in 1936 and 38.7 per cent in 1943. The average daily census last year was 3,219 and the average length of stay 23.7 days.

It is recognized, of course, that isolation hospitals do not furnish all the facilities required for the segregation and care of contagious diseases throughout the country.

*Hospital Facilities for Contagious Diseases
(Exclusive of Isolation Hospitals)*

	Hospitals	Beds
<i>According to Ownership or Control:</i>		
Federal.....	579	27,499
State.....	178	3,095
County.....	110	1,411
City.....	81	2,916
City-county.....	21	398
Total governmental.....	969	35,310
Church.....	181	1,008
Nonprofit associations.....	338	2,436
Individual and partnership.....	122	285
Corporations (profit unrestricted).....	39	144
Total nongovernmental.....	680	3,963
Total all hospitals.....	1,649	39,282
<i>According to Type of Service:</i>		
General.....	1,336	31,345
Nervous and mental.....	107	1,976
Tuberculosis.....	36	923
Orthopedic.....	21	216
Departments of institutions.....	93	780
All other hospitals.....	56	1,042
Total all hospitals.....	1,619	39,282

Many other hospitals maintain units for isolation care or the temporary hospitalization of patients awaiting transfer to other contagious disease departments. To ascertain the full scope of this service, therefore, all the hospitals were asked in the last annual survey to indicate whether isolation facilities are furnished for contagious diseases and, if so, how many beds are avail-

able. Tuberculosis facilities were not included in this study. Reports were received from nearly 99 per cent of the 6,655 hospitals registered by the American Medical Association. These indicate that 1,649 hospitals exclusive of the isolation hospitals already described can supply 39,282 beds for contagious disease care. Included in this number are 156 hospitals which reported available facilities but did not specify the number of beds.

Five hundred and seventy-nine federal hospitals report 27,499 beds for this type of service, whereas 178 state hospitals have 3,095 beds, 110 county hospitals 1,411, 81 municipal hospitals 2,916 and 21 city-county hospitals 398. In the nongovernmental group it was found that 181 church related hospitals have 1,098 beds, 338 other nonprofit hospitals 2,436 and 161 proprietary hospitals 429.

As regards general hospitals it can be shown that 1,336 supply 34,345 beds for the isolation and care of contagious diseases. These general hospital facilities may be subdivided as follows: 541 federal hospitals 27,131 beds, 202 state, county and city hospitals 3,960 beds and 593 nongovernmental hospitals 3,254 beds.

General Hospitals Having Facilities for Contagious Diseases

	Hospitals	Beds
<i>According to Ownership or Control:</i>		
Federal.....	541	27,131
State.....	25	630
County.....	91	1,063
City.....	67	1,835
City-county.....	19	382
Total governmental.....	743	31,001
Church.....	170	998
Nonprofit associations.....	275	1,833
Individual and partnership.....	113	249
Corporations (profit unrestricted).....	35	134
Total nongovernmental.....	593	3,254
Total all hospitals.....	1,336	34,345

Reference should be made to the tables showing contagious disease departments classified by states, control and type of service.

DISEASE NOMENCLATURE

The new edition of the Standard Nomenclature of Disease was published by the American Medical Association in June 1942. The Standard Nomenclature of Operations, a new publication, is incorporated in the same volume.

In 1942, 1,014 hospitals stated that they were using the Standard Nomenclature. During 1943, 1,660 hospitals reported the use of the Standard Nomenclature or specialized classification based on it. Approximately 1,000 hospitals employ Ponton's Alphabetical, Massachusetts General Hospital or the Bellevue Hospital classification. Other systems were reported by 240 civilian hospitals. The Standard Nomenclature is now employed in all United States Public Health Service hospitals.

According to the returns from the annual questionnaire at least 600 additional hospitals installed the Standard Nomenclature between 1942 and 1943. Hospitals planning to establish a modern disease classification should consider the adoption of a nomenclature that is suitable for universal use. The Standard Nomenclature of Disease has been officially endorsed by the American Medical Association, the American College of Surgeons, the American Hospital Association and several other medical and surgical societies.

INTERNSHIPS AND RESIDENCIES

On Jan. 1, 1944, when the 9-9-9 program of the Procurement and Assignment Service was inaugurated, there were 715 civilian hospitals approved for internships and 659 for residency training. The total number of approved hospitals, however, was 1,054, since 320 were accredited in both classifications. The federal hospitals approved by the Council for intern and residency training are not included in the present study.

Reports received at the beginning of the year showed that the approved hospitals had 5,170 interns on duty, 1,452 assistant residents and 2,064 resident physicians. These figures, it should be noted, are considerably lower than those reported in January 1943, when 5,567 interns were employed, 1,210 assistant residents, 2,633 resident physicians and 609 fellows. The present distribution of interns and residents, by states, is shown in the accompanying table.

A separate article describing the present status of the 9-9-9 program is included in this report. On purely educational grounds it would be impossible to defend a nine month internship, which must be regarded as a wartime educational casualty. Reluctantly, and only after careful consideration of the advantages and disadvantages and weighing the possible alternatives, the Council has recognized the so-called 9-9-9 plan as the best available under present wartime conditions.

The plan conserves medical manpower for both military and civilian use. Each year approximately 7,000 men graduate from medical schools under the accelerated program. Under the old plan, three months of their internship would overlap with the internships of the next class. The quality of instruction in the overlapping period was often inferior, adding considerably less than the equivalent of three months' time to the nine month overlapping period.

The 9-9-9 program assures the deferment of assistant residents and residents, even though the period of additional training is less than the three or more years generally considered desirable, and readily attainable in peacetime. It was the only method of deferment of commissioned officers as assistant residents and residents on which agreement could be reached. If a one year internship was to be continued, hospitals would be forced to operate without any commissioned officers deferred as residents. It is better to have one third of the intern group continue for nine months as assistant residents and one sixth of the group for a second nine months as residents than to have no deferments for hospital service after the first year of internships. The latter was apparently the only alternative and was considered to be less desirable than the 9-9-9 program.

TYPES OF INTERNSHIPS

The internship has long been considered an essential preparation for general practice and a prerequisite for subsequent specialty training. It now holds a similar relationship to the needs of the military service and should therefore be organized in such a manner that interns will receive wide experience in the major divisions of medicine and a thorough training in modern medical technics. To accomplish this purpose most hospitals are offering a rotating type of service, as evidenced by recent reports. These indicate that 673, or 94 per cent, of the approved internships are of the rotating type, while only 23, or 3 per cent, are mixed and 19, or 2 per cent, straight. Ten hospitals have

combined services, such as rotating and straight or straight and mixed.

In relation to individual internships, it can be shown that 4,551 interns, or 88 per cent of the total number, are now serving on a rotating basis and 152, or 3 per cent, are in the mixed group, while 467, or 9 per cent, have straight assignments. In 1942 the corresponding figures were 86.2, 3.2 and 10.5 respectively.

INTERNSHIP VACANCIES

The inauguration of the 9-9-9 program in January required many hospitals and house officers to make rapid adjustments in relation to quota allocations. To assist in this matter the Council published weekly lists

*Interns and Residents in Approved Hospitals—1944
(Civilian Hospitals Only)*

State	Hospitals	Interns	Assistant Residents	Residents
Alabama.....	10	31	4	12
Arizona.....	3	6	..	..
Arkansas.....	4	11	..	..
California.....	52	374	79	169
Colorado.....	17	59	1	20
Connecticut.....	26	94	28	28
Delaware.....	5	20	1	1
District of Columbia.....	13	79	27	37
Florida.....	7	26	4	21
Georgia.....	12	68	41	21
Illinois.....	76	434	58	204
Indiana.....	22	99	23	22
Iowa.....	13	35	36	16
Kansas.....	8	26	3	10
Kentucky.....	11	29	19	12
Louisiana.....	13	153	48	61
Maine.....	5	14	2	1
Maryland.....	22	151	60	75
Massachusetts.....	73	273	70	100
Michigan.....	47	211	136	109
Minnesota.....	23	107	10	42
Mississippi.....	1	..	..	1
Missouri.....	36	185	73	76
Montana.....	2	2	..	..
Nebraska.....	13	27	3	6
New Hampshire.....	3	8	..	3
New Jersey.....	52	188	35	68
New York.....	162	1,019	395	578
North Carolina.....	13	76	50	27
North Dakota.....	2	..	..	..
Ohio.....	50	245	127	118
Oklahoma.....	7	36	6	11
Oregon.....	7	38	0	12
Pennsylvania.....	106	487	35	167
Rhode Island.....	8	20	4	9
South Carolina.....	3	20	3	2
Tennessee.....	15	86	20	21
Texas.....	26	110	13	27
Utah.....	5	25	..	7
Vermont.....	2	4	..	..
Virginia.....	15	61	20	25
Washington.....	17	62	3	5
West Virginia.....	12	28	6	14
Wisconsin.....	29	101	24	25
Totals.....	1,054	5,170	1,452	2,064

in THE JOURNAL giving names of hospitals in need of interns and resident physicians. Copies of these lists were furnished regularly to all medical schools and to individual applicants. Since November 12 approximately 475 hospitals have been listed with essential data regarding location, bed capacity, annual admissions, name of superintendent and number of interns and residents required. This procedure, which is still in use, has been effective in meeting the needs of many institutions and applicants. The Council will be glad to be of further assistance to hospitals and interns whenever difficulties are experienced in obtaining house staff appointments.

Under the present accelerated program of medical education there may be considerable difficulty in adjusting hospital internships to the various periods of graduation. By careful analysis of this problem in relation to

future graduating classes it will usually be possible to stagger appointments in such a way as to insure reasonable continuity of intern service from year to year. The accompanying list of medical schools showing dates of graduation for 1944 and 1945 should prove helpful to hospitals in the selection of future interns.

GRADUATES OF LATIN AMERICAN SCHOOLS

The Council has stated that hospitals approved for internships and residencies may accept graduates of Latin American schools as interns or resident physi-

Graduation Dates—1944-1945

Medical School	1944		1945 (Approximately)	
	1944	1945	1944	1945
University of Arkansas.....	March	December	September	
Coll. of Med. Eval.....	September		June	
Stanford University	January	September	July	
University of California.....	June		March	December
Univ. of Southern California.....	July		April	
University of Colorado.....	September		June	
Yale University	September		June	
George Washington Univ.....	September		June	
Georgetown University	October		July	
Howard University	March	December	September	
Emory University	September		June	
University of Georgia.....	September		June	
Loyola University	September		June	
Northwestern University	September		June	
Univ. Chicago Sch. of Med.	September		June	
University of Illinois.....	December		September	
Indiana University	April		January	September
State Univ. of Iowa.....	September		June	
University of Kansas.....	January	October	July	
University of Louisville.....	August		June	
Louisiana State University....	September		June	
Tulane University	February	October	July	
Johns Hopkins University....	August		May	
University of Maryland.....	September		June	
Boston University	September		June	
Harvard Medical School.....	September		June	
Tufts Coll. Med. School.....	September		June	
University of Michigan.....	June		March	
Wayne University	September		June	
University of Minnesota.....	September		June	
St. Louis University.....	September		June	
Washington University	September		June	
Lehigh University	September		June	
University of Nebraska.....	September		June	
Albany Medical College.....	September		June	
Columbia University	September		June	
Cornell University	September		June	
Long Island Coll. of Med....	September		June	
New York Medical College....	September		June	
New York University.....	September		June	
Syracuse University	September		June	
University of Buffalo.....	September		June	
University of Rochester.....	September		June	
Duke University	September		June	
Bowman-Gray Sch. of Med.	September		June	
Ohio State University.....	September		June	
University of Cincinnati.....	August		May	
Western Reserve University....	September		June	
University of Oklahoma.....	September		June	
University of Oregon.....	September		June	
Hahnemann, Philadelphia	September		May	
Jefferson Medical College....	January	September	June	
Temple University	September		June	
University of Pennsylvania....	September		June	
University of Pittsburgh.....	September		June	
Woman's Med., Pa.....	March	December	September	
Med. Coll. of South Carolina	September		June	
Meharry Medical College....	March	December	September	
University of Tennessee.....	June	September	January	April
Vanderbilt University	September		June	
Baylor University	March	December	September	
Southwestern Med. Foun....	March	December	September	
University of Texas.....	June		March	December
University of Utah.....	August		May	
University of Vermont.....	September		June	
Med. Coll. of Virginia.....	September		June	
University of Virginia.....	September		June	
Marquette University	June		March	
University of Wisconsin.....	September		June	

cians. The responsibility for evaluating credentials, however, must necessarily rest with the hospitals involved, since the American Medical Association has not investigated and classified medical schools outside the United States and Canada. In this connection it will be of interest to know that the Directing Board of the

Procurement and Assignment Service has decided that graduates of Latin American medical schools currently serving as interns or residents will not be counted in the hospital quotas.

It was felt that most Latin American doctors who accepted internships or residencies were in fact postgraduate fellows attached to United States hospitals. In some instances language difficulties precluded their rendering as much medical care to hospital patients as native born and United States trained house officers. If Latin American physicians were to be counted in hospital quotas, there would be some hesitancy in accepting them in lieu of native born United States medical graduates.

Since it is highly desirable to have Latin American physicians seek postgraduate medical training in the United States, dropping them from hospital quotas would encourage hospital superintendents to accept them as interns and residents and thus facilitate their securing additional training in this country.

COMPENSATION FOR INTERNS

It is well known that medical graduates seeking hospital appointment are primarily interested in educational returns. Financial remuneration, therefore, has generally been regarded as a minor factor in the selection of an internship. In the Hospital Number of 1938 it was shown that 84.4 per cent of the interns served without salary or received \$25 a month or less. When similar reports were analyzed in 1940 it was found that 153 hospitals offered no salaries to the intern staff, 170 paid less than \$25 a month, 311 offered \$25 to \$49 and 41 listed \$50 to \$74, while only 2 paid as high as \$75. Sixty-five of these hospitals gave a bonus in addition to the regular monthly stipend.

The competition for interns in recent years has caused a considerable increase in salary schedules in many institutions. Thus it is shown in the reports of 1943 that only 85 approved internship hospitals are now operating without salaries for interns and 68 offer less than \$25 a month, while 158 are in the group of \$25 to \$49. In 1940 only 43 hospitals had salaries beyond this point, whereas at present 199 offer \$50 to \$74, 89 offer \$75 to \$99 and 77 offer \$100 or more. Nine hospitals grant compensation solely in the form of a bonus, but in addition there are 75 institutions listed whose stipends are supplemented by a monthly or annual bonus. In this connection it is of interest to note that in the group of hospitals paying \$100 or more one offers \$175 a month, one \$165, four \$150, one \$140, seven \$125, one \$120 and the rest \$100.

On further analysis it can be shown that 68 per cent of the present interns receive no salary or less than \$50 a month, 24 per cent are in the \$50 to \$99 group, 6 per cent receive \$100 or more and 2 per cent obtain bonus payment without regular salary allowance.

NECROPSY PERFORMANCE

The incidence of necropsy performance has long been considered a reliable index of the quality of educational service in hospitals. From the standpoint of intern training interest is centered not only in the ratio of post-mortem studies but also in the volume of pathologic material available for house staff instruction. Both of these factors are included in the standards of the Council, which specify that hospitals undertaking the respon-

sibility of training interns should provide a minimum necropsy rate of 15 per cent and at least thirty-six postmortem examinations a year. In computing the necropsy ratio, all hospital deaths are considered with the exception of stillbirths and such coroners' cases as are not available for teaching purposes. Other factors involved in the computation of necropsy percentages were described in *THE JOURNAL*, March 11, 1939, page 924.

In 1943 the hospitals approved for intern training reported a total of 229,438 deaths exclusive of stillbirths and cases released to legal authorities. The number of necropsies was 71,808, indicating an average ratio of 31.7 per cent as compared with 36.5 per cent in the previous year. From 1938 to 1941 the corresponding rates were 37.6, 37.8, 38.9 and 38.97 respectively. For comparative purposes it is of interest to note that 74,879 postmortem examinations were performed in 1942, 82,587 in 1941 and 81,849 in 1940. In this connection, however, it should be mentioned that the data for the last two years do not include the reports of federal hospitals approved for intern training.

Apparently the loss of medical personnel and the reduction in house staffs have seriously impaired the ability of many hospitals to maintain a satisfactory necropsy program. This is illustrated in the table on necropsy performance, which shows continual advancement in the peacetime period of 1926 to 1941, whereas the last two years evince a considerable reversal of the higher percentage levels and a significant increase in the number of hospitals with rates of less than 15 per cent. One hundred hospitals were unable to fulfil the 15 per cent requirement in 1943, as compared with 8 in 1940, 18 in 1941 and 43 in 1942. In relation to the numerical requirement, it may be noted that 168 hospitals failed to

Carolina 2, Tennessee 2, Texas 6, Virginia 1, Washington 4, West Virginia 4 and Wisconsin 2. These figures should be considered in relation to the number of hospitals approved for intern training in the respective states.

It is encouraging to note that 313 hospitals were able to obtain a ratio of 30 per cent or more in 1943, for this

Necropsy Performance in Approved Intern Hospitals

Percentage	Number of Hospitals					
	1926	1930	1937	1941	1942	1943
70 or over.....	14	19	27	43	21	21
50-69.....	21	56	68	120	95	70
30-49.....	68	164	263	290	249	222
15-29.....	146	354	348	256	294	291
Below 15.....	329	71	26	18	43	100
Hospitals reporting.....	578	661	732	727	702*	704*

* Does not include federal hospitals approved for intern training.

indicates that even under wartime conditions it is possible to maintain the essential functions of an educational program. Other hospitals should likewise bend every effort in this direction, for with the reduction of internships to nine months it is particularly important that the quality of house staff instruction be preserved at such levels as will insure adequate preparation for civilian and military service.

Twenty-one hospitals have the highly commendable rate of 70 per cent or over, as shown in the accompanying list. Their accomplishment should serve as an inspiration and incentive to other hospitals in the educational field.

The intern and residency hospitals as a group reported 272,044 deaths and 83,311 necropsies, an average ratio of 30.67 per cent. In 1942 the rate was 35.2 on the basis of 249,383 deaths and 87,687 postmortem examinations.

*Highest Necropsy Rates in Approved Internship Hospitals—1943**

	Control	Percentage
1. University Hospital, Ann Arbor, Mich.....	State	97.0
2. Research and Educational Hospital, Chicago ..	State	89.1
3. University of Nebraska Hospital, Omaha ..	State	86.6
4. Central Dispensary and Emergency Hospital, Washington, D. C.....	NPA-sen	86.5
5. Evanston Hospital, Evanston, Ill.....	NPA-sen	82.7
6. University of California Hospital, San Francisco ..	State	78.5
7. University of Chicago Clinics, Chicago.....	NPA-sen	77.6
8. Iowa Methodist Hospital, Des Moines, Iowa ..	Church	76.3
9. Beverly Hospital, Beverly, Mass.....	NPA-sen	74.7
10. Strong Memorial and Rochester Municipal Hospitals, Rochester, N. Y.....	NPA-sen	74.6
11. Rochester General Hospital, Rochester, N. Y ..	NPA-sen	74.5
12. Mary Hitchcock Memorial Hospital, Hanover, N. H ..	NPA-sen	73.6
13. Colorado General Hospital, Denver.....	State	72.1
14. St. Barnabas Hospital, Minneapolis.....	NPA-sen	70.9
15. Columbus Hospital, Chicago.....	Church	70.8
16. Acker Hospital, St. Paul.....	CyCo	70.7
17. St. Mary's Hospital, Duluth, Minn.....	Church	70.0
18. Doctors Hospital, Washington, D. C.....	Corp	70.0
19. St. Luke's Hospital, Chicago.....	NPA-sen	70.0
20. Massachusetts Memorial Hospitals, Boston ..	NPA-sen	70.0
21. Trinity Hospital, Minot, N. D.....	Church	70.0

* Does not include federal hospitals approved for intern training.

achieve a minimum of thirty-six necropsies during the year. Eighty of these institutions were also deficient on a percentage basis.

The number of hospitals reporting necropsy rates below 15 per cent are distributed as follows: Florida 2, Georgia 4, Illinois 7, Indiana 3, Iowa 4, Kentucky 3, Maine 1, Maryland 1, Massachusetts 7, Michigan 3, Missouri 1, New Jersey 10, New York 9, North Carolina 1, Ohio 8, Oklahoma 2, Pennsylvania 13, South

POSTWAR GRADUATE MEDICAL EDUCATION

It is anticipated that thousands of physicians whose hospital training has been interrupted by the call to military service will be seeking advanced training after the war. The Council on Medical Education and Hospitals, therefore, has undertaken a study of postwar graduate educational facilities as one of its major responsibilities. It has recently completed a preliminary survey to determine all available and potential facilities for advanced training in connection with intern and residency hospitals, undergraduate and graduate medical schools, departments of health, state medical associations and other agencies interested in graduate and postgraduate medical education.

A report of the Council's studies was published in the Jan. 1, 1944 issue of *THE JOURNAL*. Reprints of this article were later distributed to the various agencies, organizations, institutions and committees concerned with postwar educational and medical problems. The report shows clearly that constructive planning is already under way and that institutions are anxious to cooperate to the full limit of their facilities in providing hospital residencies, basic medical science instruction and postgraduate courses as may be required by the returning medical officers.

There are indications that a large number of younger medical officers are desirous of postgraduate medical education after the war. In a recent sample study it was found that more than 80 per cent of medical graduates (1938 to 1943) expressed an opinion that they would like to qualify for certification by an American

Specialty Board. It is appreciated that there may be some shifting of point of view of these men with the progress of the war. However, the high percentage of voluntary expressions for continued specialized hospital training is significant in relation to possible future needs.

The present plan of wartime graduate medical meetings is serving a very useful course of instruction for all medical officers. Some of the older physicians have expressed a preference for a short refresher course of instruction of four to eight weeks for their postwar medical training. They have suggested that refresher courses be patterned after the present wartime graduate medical meetings. Courses are to be held in the large

medical centers and be an intensive clinical review of general and special subjects.

This study of postwar educational facilities will be continued so that the Council will be able, at the close of the war, to provide a complete printed list of all available educational opportunities. The Committee on Postwar Medical Service of the American Medical Association is now distributing questionnaires to Army, Navy and Public Health Service medical officers which will give further information regarding the educational desires of these men. With this information at hand, the Council will be able to proceed more effectively in its study of the required facilities for postwar graduate training.

PRESENT STATUS OF INTERNSHIP

Lieutenant Colonel Harold C. Lueth, M. C., U. S. Army

Liaison Officer, American Medical Association

The Procurement and Assignment Service adopted the 9-9-9 plan on Oct. 15, 1943. Briefly, the plan is a uniform system of nine months training as interns, a second nine month period as an assistant resident and a third nine month period as a resident. The Procurement and Assignment Service was confronted with providing sufficient numbers of recent medical graduates to the armed services for duty and at the same time assuring civilian hospitals of an adequate supply of house officers. To meet these objectives, state quotas of interns and residents were prepared for the civilian hospitals of the United States. The data shown in the 1940 Annual Report of Hospitals prepared by the Council on Medical Education and Hospitals were used as a basis. In general the quota was a proportionate ratio of the total number of interns and residents on duty at the hospitals as of March 15, 1940. Certain adjustments were made for hospitals with large teaching programs and hospitals with large increases in patient loads. There was a general increase of 14 per cent in hospital admissions in 1943 compared to 1940, so that a hospital had to have an increase of more than 14 per cent before it could claim additional house staff on the basis of an increased patient load.

Acceleration of the medical curriculum resulted in a large number of medical graduates who became available for hospital service every nine months. A nine month hospital internship and residency was the most efficient method of integrating the accelerated medical curriculum with hospital needs. It avoids the delays, overlapping and wastage of a one year hospital service. Objection has been raised to the nine month period of hospital service on the ground that it is not adequate for peacetime standards of medical education. The 9-9-9 plan was the most feasible method of deferment of commissioned officers as assistant residents and residents that could be approved by Surgeons General of the Army and Navy. If a one year internship was to be continued, hospitals would be forced to operate without any commissioned officers as residents. The 9-9-9 plan thus provides the most efficient use of recent medical graduates, assures young physicians the best hospital training that is possible under wartime conditions and permits the widest possible coverage of house officers to all hospitals. It should however be pointed out that hospitals requesting nine month deferments of intern and junior residents should make their

decision with reference to the personnel they desire as early as possible in order that the deferment request may be forwarded through the central office of the Procurement and Assignment Service to the Surgeon General of the Army and Navy at least sixty days prior to the date on which the intern or assistant resident would normally be called to active duty.

Some shifting of personnel and rearrangement of services was necessary during the conversion period. Many local changes aided in the success of the plan. State chairmen were empowered to change quotas between hospitals when not more than three house officers were involved. House officers were often called on to cover more than one service. In a hospital that formerly had eight surgical residents and two ear, nose and throat residents, for example, a reduction to six residents in surgery occurred under the 9-9-9 plan. Obviously some of the residents in surgery had to provide service for the ear, nose and throat department. In general most hospital superintendents handle such problems well.

Many hospitals had selected their intern and resident staffs on the traditional one year basis in advance of the advent of the 9-9-9 plan. There was some skepticism in regard to the likelihood of persuading recent graduates who had been accepted for hospital training at one hospital to accept an internship elsewhere. Through the cooperative efforts of the deans of medical schools, hospital superintendents, state and local chairmen, Procurement and Assignment Service, hospital staffs and the interns and residents involved, the conversion was accomplished with surprisingly little difficulty. A clearing house arrangement was formulated through the assistance of the Council on Medical Education and Hospitals. Hospitals with quota allotments and without interns and residents were published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. After the first few weeks of the transitional period there were very few hospitals entitled to interns and residents without such personnel. The initiation of the 9-9-9 plan called for a reduction of more than 8,100 approved internships of one to three years length and nearly 6,000 approved residencies of similar length to 6,000 internships and 4,200 residencies of nine months duration. The successful operation of the 9-9-9 plan reflects the earnest cooperation of all concerned and illustrates the willingness of American medicine to make those necessary sacrifices of a nation at war.

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,655 hospitals, sanatoriums and related institutions that are located in the United States and 130 in Alaska, Canal Zone, Hawaii, Puerto Rico and Virgin Islands. The list for each state is presented in two groups: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include infirmaries, nursing homes and other institutions designed to give certain medical and nursing care in an ethical and acceptable manner, without giving a full hospital service.

Registration of hospitals is governed by the Essentials of a Registered Hospital, adopted by the House of Delegates in 1928 and revised in 1939.

Registration is a basic recognition, extended to all the hospitals and related institutions in the following list, concerning which we have no evidence of irregular or unsafe practices. Approval is designation of certain registered institutions by the Council on Medical Education and Hospitals for internships, residencies and fellowships; or by the American College of Surgeons as unconditionally meeting its minimum standards.

KEY TO SYMBOLS AND ABBREVIATIONS

* Approved for training interns by the Council on Medical Education and Hospitals. List with detailed information is sent on request.
† Approved for residencies or fellowships. List with detailed information is sent on request.

▲ Approved by American College of Surgeons as meeting unconditionally its minimum standards.
○ School of nursing accredited by state board of nurse examiners.
○ Affiliated for nurse training on state accredited basis.
† Figures for "average census" and "admissions" are exclusive of newborn infants.

The column headed "Type of Service" tells what diseases are treated in each institution:

Card	Cardiac	ENT	Eye, ear, nose and throat	Iso	Isolation	N&M	Nervous and mental
Chil	Children	Gen	General	Mat	Maternity	Orth	Orthopedic
Chr	Chronic	Incur	Incurable	MatCh	Maternity and children	SkCa	Skin and cancer
Conv	Convalescent and rest	Indus	Industrial	McDe	Mentally deficient	TB	Tuberculosis
Drug	Drug and alcoholic	Inst	Institutional	Ment	Mental	Ven	Veneral
Epil	Epileptic						

The column headed "Control" indicates control, or auspices under which the institution is conducted:

GOVERNMENTAL			NONPROFIT ORGANIZATIONS		PROPRIETARY	
Fed	Federal	State	Church	Indiv	Indiv	Individual
LA	Indian Affairs	City	NPAssn	Part	Part	Partnership
Army	United States Army	County		Corp	Corp	Corporation (unrestricted as to profit)
Navy	United States Navy	City-County				
USPHS	United States Public Health Service	CyCo				
Vet	Veterans Administration Facility					

The accompanying list omits additions to hospital facilities that may have been made by certain departments of the Federal Government since the publication of the issue of March 15, 1941.

Corrections were made in the list to the time of going to press. Totals of the list, therefore, may vary from totals in Tables 1 and 2 which were necessarily compiled earlier.

ALABAMA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Alabama City, 8,544—Etowah							
Etowah County Tuberculosis Sanatorium	TB	County	22	18	..	...	44
Albertville, 3,651—Marshall							
Sand Mountain Infirm.	Gen	Indiv	24	6	4	69	350
Alexander City, 6,610—Tallapoosa							
Russell Hospital	Gen	Corp	54	14	10	262	1,073
Altoona, 995—Etowah							
Klein Hospital	Gen	Indiv	27	17	3	48	671
Andalusia, 6,886—Covington							
Memorial Hospital	Gen	Part	35	12	6	129	923
Anniston, 25,823—Calhoun							
Garner Hospital	Gen	City	62	43	18	906	2,827
Susie Parker Stringfellow Memorial Hospital	TB	NPAasn	18	14	..	...	37
Athens, 4,342—Limestone							
Limestone County Hospital	Gen	Indiv	10	7	2	180	500
Atmore, 3,200—Escambia							
Atmore General Hospital	Gen	Indiv	26	8	5	112	732
Auburn, 4,632—Lee							
John Hodges Drake Hosp.	Gen	State	63	21	4	55	1,617
Bellamy, 450—Sumter							
Bellamy Hospital	Gen	NPAasn	16	2	2	15	129
Bessemer, 22,826—Jefferson							
Bessemer General Hospital	Gen	Corp	72	35	5	134	1,204
Birmingham, 267,383—Jefferson							
Baptist Hospitals	Gen	Church	190	141	26	850	6,531
Children's Hospital	Chil	NPAasn	50	27	..	...	1,329
Hargis Clinic Hospital	Gen	Indiv	25	13	4	34	542
Hill Crest Sanitarium	N&M	Indiv	50	35	..	...	670
Hillman Hospital	Gen	County	429	248	49	1,187	7,681
Jefferson Hospital	Gen	County	535	187	30	1,613	8,416
Jefferson Tuberculosis Sanat.	TB	County	150	106	..	...	303
Miss Quinn's Nursing Home	Conv	Part	15	10	..	...	520
Norwood Hospital	Gen	Church	216	104	30	862	5,755

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
St. Vincent's Hospital	Gen	Church	127	101	12	294	3,985
Slossfield Maternity Hospital	Mat	County	10	7	16	221	274
South Highlands Infirm.	Gen	Corp	150	126	24	690	5,070
"365" Crippled Children's Clinic	Orth	NPAasn	50	38	..	...	168
Cullman, 5,074—Cullman							
Cullman Hospital	Gen	CyCo	69	23	16	438	2,223
Decatur, 16,604—Morgan							
Benevolent Society Hospital	Gen	NPAasn	52	38	13	383	1,311
Dothan, 17,194—Houston							
Dr. M. S. Davis' Private Hospital	Gen	Indiv	30	..	5	...	...
Frasier-Ellis Hospital	Gen	Indiv	60	52	9	162	1,801
Moody Hospital	Gen	Corp	74	43	12	309	1,813
East Tallapoosa, 3,000—Tallapoosa							
Community Hospital	Gen	NPAasn	29	12	9	272	1,061
Enterprise, 4,333—Coffee							
Gibson Hospital	Gen	NPAasn	38	21	4	107	1,003
Lufaula, 6,269—Barbour							
Salter Hospital	Gen	Indiv	52	32	8	179	1,286
Fairfield, 11,703—Jefferson							
Employees' Hospital of Tennessee Coal, Iron and Railroad Company	Gen	NPAasn	273	192	42	1,111	8,077
Fayette, 2,668—Fayette							
McNease and Robertson Hospital	Gen	Part	20	9	4	92	515
Flint (Decatur P.O.), 134—Morgan							
Morgan County Tuberculosis Sanatorium	TB	County	53	50	..	...	111
Florida, 2,999—Covington							
Lakeview Hospital	Gen	Indiv	30	8	3	80	400
Florence, 15,042—Lauderdale							
Eliza Coffee Memorial Hosp.	Gen	City	40	37	6	411	2,353

Key to symbols and abbreviations is on this page, preceding the tabulation.

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fort McClellan, —Calhoun Station Hospital†	Gen	Army	200	165	2	25	5,110
Gadsden, 36,975—Tlowah							
Forrest General Hospital	Gen	Indiv	85	32	10	112	1,156
Holy Name of Jesus Hosp.†	Gen	Church	102	77	18	638	7,106
Greensboro, 2,031—Hale							
Greensboro Hospital	Gen	Indiv	18	5	3	11	218
Greenville, 5,075—Butler							
Spier Hospital	Gen	Indiv	46	8	6	35	670
Stabler Infirmary	Gen	Part	40	10	9	175	878
Guntersville, 4,598—Marshall							
Guntersville City Hospital	Gen	City	25	12	5	50	601
Huntsville, 13,050—Madison							
Huntsville Hospital	Gen	NPAasn	70	40	10	133	2,610
Jackson, 2,039—Clarke							
South Alabama Infirmary	Gen	Corp	16	7	3	53	396
Jasper, 6,847—Walker							
Peoples Hospital	Gen	County	70	35	8	227	1,627
Walker County Hospital	Gen	Corp	55	28	7	109	1,237
Lafayette, 2,138—Chambers							
Bayson Memorial Sanatorium TB	Counties		85	70	..	..	120
Mobile, 78,720—Mobile							
Allen Memorial Home	Mat	Church	25	11	25	815	837
City Hospital†	Gen	CyCo	132	110	18	610	4,567
Mobile County Tuberculosis Sanatorium	TB	NPAasn	60	33	..	..	45
Mobile Infirmary†	Gen	NPAasn	150	127	10	1,107	5,358
Providence Hospital†	Gen	Church	112	81	32	1,011	1,160
U. S. Marine Hospital†	Gen	USPHS	191	118	..	..	2,103
Montgomery, 78,081—Montgomery							
Fitts Hill Hospital	Gen	Indiv	30	20	8	242	1,282
Fraternal Hospital	Gen	Indiv	35	45	10	91	1,878
Hubbard Hospital	Gen	Indiv	55	38	12	252	2,026
Kilby Prison Hospital	Inst	State	45	28	..	..	1,521
Montgomery Tuberculosis Sanatorium	TB	NPAasn	100	92	..	..	196
St. Margaret's Hospital†	Gen	Church	163	123	25	917	6,261
Station Hospital†	Gen	Army	50	50	1	28	1,911
Veterans Admin. Facility†	Gen	Vet	268	143	..	..	1,553
Mount Vernon, 810—Mobile							
Seney Hospital	Ment	State	1,639	1,500	..	..	511
Opelika, 8,487—Lee							
Opelika Infirmary	Gen	Indiv	25	12	8	220	720
Pell City, 900—St. Clair							
Pell City Infirmary	Gen	Indiv	36	12	8	165	721
Prattville, 2,041—Autauga							
Prattville General Hospital	Gen	Part	20	9	5	103	531
Repton, 165—Conecuh							
Carter Hospital	Gen	Indiv	16	7	3	55	388
Annoka, 4,168—Randolph							
Night Sanatorium	Gen	Indiv	50	21	5	36	703
Asellville, 3,510—Franklin							
Russellville Hospital	Gen	Indiv	30	13	4	76	708
Scottsboro, 2,831—Jackson							
Hodges Hospital	Gen	Indiv	20	6	2	67	388
Tri Counties Tuberculosis Sanatorium	TB	Counties	20	13	..	..	31
Selma, 19,831—Dallas							
Burwell Infirmary	Gen	Part	35	15	3	12	375
Goldsbey King Memorial Hospital†	Gen	NPAasn	65	29	7	10	1,038
Good Samaritan Hospital	Unit of Selma Baptist Hospital		67	10	10	310	2,567
Selma Baptist Hospital†	Gen	NPAasn	35	22	6	91	1,216
Vaughan Memorial Hospital†	Gen	Corp	75	16	18	625	2,608
Sheffield, 7,933—Colbert							
Colbert County Hospital	Gen	CyCo	75	16	18	625	2,608
Sylacauga, 6,269—Talladega							
Sylacauga Infirmary—Drummond	Gen	Corp	67	59	17	539	3,150
Fraser Hospital†	Gen	NPAasn	87	12	14	567	2,932
Talladega, 9,298—Talladega							
Citizens' Hospital	Gen	Church	18	1	1	..	69
Goodnow Hospital	Inst						
Troy, 7,055—Pike							
Beard Memorial Hospital	Gen	Indiv	35	20	7	120	1,000
Edge Hospital	Gen	Indiv	35	25	4	74	1,011
Tuscaloosa, 27,193—Tuscaloosa							
Bryce Hospital	Ment	State	3,900	4,022	..	..	1,001
Druid City Hospital	Gen	NPAasn	81	58	16	619	3,870
Stillman Institute Hospital	Gen	Church	55	25	5	90	993
Veterans Admin. Facility†	Gen	Vet	558	391	..	..	1,235
Tuskegee, 3,937—Macon							
Veterans Admin. Facility†	Ment	Vet	1,605	1,431	..	..	2,151
Tuskegee Institute, 375—Macon							
John Abdon Andrew Memorial Hospital	Gen	NPAasn	131	70	11	113	1,361
Wetumpka, 3,089—Elmore							
Wetumpka General Hospital	Gen	NPAasn	41	11	8	131	683
York, 1,783—Sumter							
Hill Hospital	Gen	Indiv	20	9	3	62	1,311

Related Institutions

Birmingham, 267,583—Jefferson							
Alabama Boys' Industrial School	Inst	State	29	4	..	..	523
Salvation Army Home and Hospital	Mat	Church	10	5	25	92	124
Montevallo, 1,490—Shelby							
Peterson Hall	Inst	State	36	5	..	..	1,610
Tuscaloosa, 27,493—Tuscaloosa							
Partlow State School	MeDe	State	835	819	..	..	58

ARIZONA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ajo, 1,100—Pima							
Phelps-Dodge Hospital	Gen	NPAasn	33	14	5	158	886
Bisbee, 5,833—Cochise							
Copper Queen Hospital	Gen	NPAasn	42	31	8	321	1,523
Chinle, 65—Apache							
Chinle General Hospital	Gen	IA	15	10	3	33	490
Coolidge, 1,200—Pinal							
Burton Cairns General Hosp.	Gen	NPAasn	61	21	12	128	800
Douglas, 8,623—Cochise							
Cochise County Hospital	Gen	County	100	69	6	40	804
Flagstaff, 5,080—Coconino							
Flagstaff Hospital	Gen	NPAasn	25	11	6	161	774
Mercy Hospital	Gen	Indiv	18	10	6	100	425
Florence, 1,383—Pinal							
Pinal County Hospital	Gen	County	46	24	9	155	725
Fort Defiance, 600—Apache							
Fort Defiance Sanatorium	Unit of Navajo Medical Center Hospital and Sanatorium						
Navajo Medical Center Hospital and Sanatorium†	GenTb IA		250	195	14	132	2,165
Fort Huachuca, 1,500—Cochise							
Station Hospital†	Gen	Army	48	31	1	12	862
Ganado, 150—Apache							
Sage Memorial Hospital†	Gen	Church	150	75	15	109	1,389
Globe, 6,141—Gila							
Gila County Hospital	Gen	County	50	32	7	167	925
Holbrook, 1,181—Navajo							
Park-Navajo Private Hosp.	Gen	Indiv	9	4	3	46	239
Jerome, 2,295—Yavapai							
United Verde Hospital†	Gen	NPAasn	54	40	8	194	1,645
Keams Canyon, 150—Navajo							
Hopi General Hospital	Gen	IA	38	35	3	63	898
Kingman, 2,200—Mohave							
Mohave General Hospital	Gen	County	40	25	8	188	1,014
McNary, 55—Apache							
McNary Hospital	Gen	NPAasn	12	3	2	32	259
Mesa, 7,221—Maricopa							
South Side District Hospital	Gen	NPAasn	50	36	9	484	2,184
Miami, 4,722—Gila							
Miami-Inspiration Hospital†	Gen	NPAasn	45	26	6	263	1,770
Morenci, 1,500—Greenlee							
Morenci Hospital	Gen	NPAasn	54	30	8	483	1,520
Nogales, 5,135—Santa Cruz							
St. Joseph's Hospital	Gen	Church	30	15	7	50	300
Oracle, 200—Pinal							
La Casa del Encanto	N&M	Indiv	8	3	..	..	8
Parker, 200—Yuma							
Colorado River Indian Agency Hospital	Gen	IA	40	9	4	37	324
Phoenix, 65,414—Maricopa							
Arizona State Hospital	Ment	State	1,600	964	..	..	491
Convalescent Home for Crippled Children	Orth	State	53	40	..	..	227
Good Samaritan Hospital†	Gen	Church	200	160	25	947	7,767
Phoenix Indian Hospital†	Gen	IA	63	48	10	109	1,157
Phoenix Indian Sanatorium†	TB	IA	130	78	..	..	205
St. Joseph's Hospital†	Gen	Church	200	176	44	1,879	10,747
St. Luke's Home	TB	Church	40	35	..	..	102
Poston, —Yuma							
Poston General Hospital	Gen	Fed	200	98	17	283	1,637
Prescott, 6,018—Yavapai							
Yavapai County Hospital	Gen	County	70	30	10	117	917
Ray, 1,100—Pinal							
Kennecott Copper Corporation Hospital	Gen	NPAasn	20	11	6	85	520
Sacaton, 315—Pinal							
Pima Indian Hospital	Gen	IA	42	21	6	99	616
Safford, 2,200—Graham							
Morris-Squibb Hospital	Gen	NPAasn	37	8	5	56	427
San Carlos, 100—Gila							
San Carlos Indian Hospital	Gen	IA	45	21	6	47	846
Sells, 800—Pima							
Indian Oasis Hospital	Gen	IA	38	21	5	46	564
Tempe, 2,900—Maricopa							
State Welfare Sanatorium	TB	State	99	93	..	..	195
Tuba City, 150—Coconino							
Tuba City Hospital	Gen	IA	41	24	5	38	756
Tucson, 36,818—Pima							
Anson Rest Home	TB	Part	32	20	..	..	53
Barfield Sanatorium	TB	Indiv	22	12	..	..	68
Comstock Children's Hosp.	TB	NPAasn	20	17	..	..	16
Desert Sanatorium of Southern Arizona	Gen	NPAasn	90	28	14	169	531
Pima County General Hosp.†	GenTb	County	140	69	10	20	1,254
St. Luke's in-the-Desert Sanatorium	TB	Church	32	18	..	..	36
St. Mary's Hospital and Sanatorium†	GenTb	Church	193	159	30	1,110	6,158
San Xavier Sanatorium	TB	IA	46	32	..	..	32
Southern Pacific Sanatorium†	TB	NPAasn	82	69	..	..	71
Veterans Admin. Facility†	TbGen	Vet	357	271	..	..	990
Whipple, —Yavapai							
Veterans Admin. Facility†	GenTb	Vet	527	231	..	..	1,033
Whiteriver, 300—Navajo							
Fort Apache Agency Hosp.	Gen	IA	48	34	4	34	635
Wickenburg, 995—Maricopa							
Wickenburg Hospital	Gen	NPAasn	21	9	3	60	402

Key to symbols and abbreviations is on page 855

ARIZONA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Winslow, 4,577—Navajo							
Winslow Indian Sanatorium	TB	IA	50	54	..	...	286
Yuma, 5,325—Yuma							
Fort Yuma Indian Hospital	Gen	IA	29	11	8	46	362
Yuma County General Hosp.	Gen	County	60	53	12	425	3,250

Related Institutions.

Kayenta, 40—Navajo							
Kayenta Indian Sanatorium	TB	IA	54	30	2	4	66
Phoenix, 65,414—Maricopa							
Eva M. Harris Maternity							
Home	Mat	Indiv	15	12	15	540	602
Tucson, 36,818—Pima							
Arizona State Elks Associa- tion Hospital	TB	NPAssn	25	18	..	...	24
Valentine, 110—Mohave							
Truxton Canyon Hospital...	Gen	IA	10	6	5	17	152

ARKANSAS

Hospitals and Sanatoriums

Alexander, 134—Pulaski							
Thomas O. McRae Memorial Sanatorium	TB	State	196	183	..	...	218
Arkadelphia, 5,078—Clark							
Townsend Hospital	Gen	Indiv	14	5	4	77	265
Batesville, 5,247—Independence							
Dr. Craig Hospital	Gen	Indiv	12	8	4	63	474
Dr. Gray's Hospital	Gen	Indiv	59	14	6	35	733
Benton, 3,502—Saline							
State Hospital	Unit of State Hospital, Little Rock						
Blytheville, 10,632—Mississippi							
Blytheville City Hospital	Gen	City	35	12	6	90	800
Walls Hospital	Gen	Indiv	34	25	6	192	1,063
Camden, 8,975—Ouachita							
Camden Hospital	Gen	NPAssn	55	21	15	315	1,617
Charleston, 958—Franklin							
Bollinger Hospital	Gen	Indiv	10	4	3	133	565
Clarksville, 3,115—Johnson							
St. Hildegard's Municipal Hos- pital	Gen	Church	26	11	5	103	1,051
Conway, 5,782—Faulkner							
Conway Memorial Hospital..	Gen	NPAssn	30	15	5	104	604
Crossett, 4,891—Ashley							
Crossett Hospital	Gen	NPAssn	16	21	12	144	1,364
Denson, —Drew							
War Relocation Authority Hos- pital	Gen	Fed	164	66	20	153	2,025
De Queen, 3,655—Sevier							
Archer Hospital	Gen	Indiv	22	10	2	48	363
De Queen General Hospital..	Gen	Part	28	11	4	119	672
Dermott, 3,082—Chicot							
Dermott Municipal Hospital..	Gen	Church	30	15	6	105	744
Dumas, 2,323—Desha							
Dumas Hospital	Gen	Corp	24	7	6	110	468
El Dorado, 15,858—Union							
Warner Brown Hospital	Gen	Church	69	55	10	485	3,767
Fayetteville, 8,212—Washington							
Fayetteville City Hospital	Gen	City	65	44	14	410	2,187
Veterans Admin. Facility	Gen	Vet	258	169	..	...	1,491
Fort Smith, 36,584—Sebastian							
Arkansas Tuberculosis Sanat.	Unit of Arkansas Tuberculosis Sanatorium, State Sanatorium, Ark.						
St. Edward's Mercy Hosp.	Gen	Church	135	120	34	897	4,112
Sparks' Memorial Hospital	Gen	NPAssn	100	48	18	437	2,768
Haskell, 171—Saline							
State Hosp., Benton Division	Unit of State Hospital, Little Rock						
Heber Springs, 1,656—Cleburne							
Estelle Hospital	Gen	Indiv	22	17	5	121	701
Helena, 8,546—Phillips							
Helena Hospital	Gen	NPAssn	70	31	12	216	1,417
Hope, 7,475—Hempstead							
Josephine Hospital	Gen	Indiv	22	6	4	77	340
Julia Chester Hospital	Gen	NPAssn	35	26	8	187	1,091
Hot Springs National Park, 21,370—Garland							
Army and Navy General Hos- pital	Gen	Army	412	369	3	10	3,098
Leo N. Levi Memorial Hospi- tal	Gen	NPAssn	95	51	5	85	803
Ozark Sanatorium and Bath House	Gen	Corp	60	16	4	63	468
St.	Gen	Church	144	109	12	347	3,406
U.							
Medical Center Infirmary...	Ven	USPHS	80	59	4	14	2,472
Jonesboro, 11,729—Craighead							
St.	Gen	Church	100	77	12	490	3,061
Lafayette	Gen	Part	42	20	5	89	1,077
Litt							
A							
Baptist State Hospital	Gen	NPAssn	83	62	..	...	609
Florence Crittenton Home...	Mat	NPAssn	30	5	13	27	37
Granite Mountain Hospital...	Gen	Indiv	20	4	2	29	187
Missouri Pacific Hospital	Indus	NPAssn	125	47	..	...	1,939
Pulaski County Hospital...	Gen	County	177	163	4	50	417
St. Vincent's Infirmary	Gen	Church	200	194	60	1,481	7,793
State Hospital	Ment	State	4,467	4,619	..	...	1,686
Trinity Hospital	Gen	Part	40	14	10	100	967
United Friends of America Hospital	Gen	NPAssn	25	19	2	35	401
University Hospital	Gen	State	200	138	20	602	3,254

ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Magnolia, 4,326—Columbia							
City Hospital	Gen	City	23	15	4	112	746
Magnolia Sanitarium	Gen	Part	19	7	1	46	631
Mena, 3,510—Polk							
Mena Hospital	Gen	Indiv	32	15	10	79	611
Monticello, 3,650—Drew							
Mack Wilson Hospital	Gen	Indiv	30	18	4	105	862
Morrilton, 4,608—Conway							
St. Anthony's Hospital	Gen	Church	30	26	4	190	1,205
Newport, 4,321—Jackson							
Dr. Gray's Hospital	Gen	Indiv	25	12	6	104	682
Paragould, 7,070—Greene							
Dickson Memorial Sanitarium	Gen	Corp	25	18	12	152	1,163
Pine Bluff, 21,290—Jefferson							
Davis Hospital	Gen	City	68	65	20	721	2,370
Prescott, 3,177—Nevada							
Cora Donnell Hospital	Gen	Indiv	30	16	6	97	949
Rogers, 3,550—Benton							
Rogers Hospital	Gen	Indiv	14	...	..	Reorganized	
Russellville, 5,927—Pope							
Haney Eye, Ear, Nose and Throat Hospital	ENT	Indiv	8	2	..	...	120
St. Mary's Hospital	Gen	Indiv	50	45	12	194	1,725
Searcy, 3,670—White							
Hawkins Clinic Hospital	Gen	Indiv	26	10	10	77	500
Porter Rodgers Hospital	Gen	Indiv	50	37	10	223	2,636
Siloam Springs, 2,764—Benton							
John Brown University Hosp.	Gen	NPAssn	25	9	5	83	487
State Sanatorium, 300—Logan							
Arkansas Tuberculosis Sana- torium	TB	State	1,155	1,153	..	...	1,634
Texarkana, 11,821—Miller							
Michael Meagher Memorial Hospital	Gen	Church	55	47	12	596	2,128
St. Louis Southwestern Hos- pital	Indus	NPAssn	150	72	..	...	3,059
Veterans Administration Facility, —Pulaski							
Veterans Admin. Facility	Ment	Vet	1,360	1,309	..	...	703
Warren, 2,516—Bradley							
Hunt Hospital	Gen	Indiv	20	8	5	103	349

CALIFORNIA

Hospitals and Sanatoriums

Agnew, 300—Santa Clara							
Agnews State Hospital	Ment	State	3,612	3,507	..	...	1,065
Ahwahnee, 50—Madera							
Ahwahnee Sanatorium	TB	County	123	103	..	...	77
Alameda, 36,256—Alameda							
Alameda Hospital	Gen	NPAssn	92	71	21	633	3,498
U. S. Naval Air Station Dis- pensary	Gen	Navy	166	110	..	...	5,328
Albany, 11,493—Alameda							
Albany Hospital	Gen	Indiv	32	30	22	970	1,892
Alcatraz, —San Francisco							
U. S. Penitentiary Hospital	Inst	USPHS	30	8	..	...	193
Alhambra, 38,935—Los Angeles							
Alhambra Hospital	Gen	Corp	40	32	18	728	2,635
Angel Island, 478—Marin							
Station Hospital	Gen	Army	70	41	..	...	1,584
Antioch, 5,106—Contra Costa							
Antioch Hospital	Gen	Indiv	23	14	12	593	1,446
Arcata, 1,855—Humboldt							
Trinity Hospital	Gen	Church	33	...	Destroyed by fire		
Arlington, 3,440—Riverside							
Riverside County Hospital..	See Riverside						
Artesia, 3,691—Los Angeles							
Artesia Hospital	Gen	Indiv	25	18	9	490	1,172
Atwater, 1,235—Merced							
Bloss Memorial Hospital	Unit of Merced General Hospital, Merced						
Auberry, 200—Fresno							
Wish-Iah Sanatorium	TB	County	102	88	..	...	77
Auburn, 4,013—Placer							
Highland General Hospital..	Gen	Indiv	25	10	8	145	850
Placer County Hospital	Gen	County	136	92	5	62	572
Bakersfield, 29,252—Kern							
Kern General Hospital	Gen	County	600	568	60	1,242	8,519
Merced Hospital	Gen	Church	119	108	24	827	4,422
.....	TB	Indiv	35	17	..	...	18
.....	Gen	Corp	35	28	15	686	1,423
Benmont, 1,429—San Mateo							
Alexander Sanitarium	N&M	Corp	75	58	..	...	255
California Sanatorium	TB	Corp	100	78	..	...	278
Twin Pines Sanitarium	N&M	Corp	50	34	..	...	140
.....	Gen	Corp	116	91	45	1,648	5,032
.....	Gen	NPAssn	102	60	25	478	2,942
Ernest V. Cowell Memorial Hospital	Gen	State	100	40	..	...	2,638
Blythe, 2,355—Riverside							
Riverside County Branch Hos- pital	Gen	County	23	15	8	137	850
Brawley, 11,718—Imperial							
Brawley Community Hospital	Gen	Indiv	22	10	9	302	800
Camarillo, 300—Ventura							
Camarillo State Hospital	Ment	State	3,970	3,728	..	...	1,510

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Carmel, 2,837—Monterey							
Peninsula Community Hosp.	Gen	NPAasn	40	27	15	443	1,404
Chula Vista, 5,138—San Diego							
U. S. Naval Air Station Dis- pensary	Gen	Navy	50	...	...	Estab. 1913	
Clovis, 1,626—Fresno							
Clovis Sanitarium	Gen	Part	13	5	6	76	210
Coalinga, 5,026—Fresno							
Pleasant Valley Hospital	Gen	NPAasn	15	8	6	141	412
Colfax, 794—Placer							
Bushnell Sanatorium	Unit of Colfax School for the Tuberculous						
Colfax Hospital	Unit of Colfax School for the Tuberculous						
Colfax School for the Tuberculous							
Colusa, 2,255—Colusa	TB	Indiv	31	23	...	...	56
Colusa Memorial Hospital	Gen	County	40	25	8	143	881
Compton, 16,195—Los Angeles							
Compton Sanitarium	N&M	Corp	120	68	...	...	486
Las Campanas Hospital	Gen	Corp	46	43	20	846	2,009
Women's and Children's Hos- pital	Gen	Indiv	21	...	8	Estab. 1913	
Concord, 1,753—Contra Costa							
Concord Hospital	Gen	Indiv	40	15	15	312	1,146
Corona, 8,761—Riverside							
U. S. Naval Hospital	Gen	Navy	1,757	791	...	...	4,768
Coronado, 6,932—San Diego							
Coronado Hospital	Gen	Corp	30	9	8	113	466
Covina, 3,042—Los Angeles							
Covina Hospital	Gen	Part	60	33	12	345	1,369
Crescent City, 1,363—Del Norte							
Knapp Hospital	Gen	NPAasn	25	10	5	78	473
Culver City, 8,976—Los Angeles							
Community Hospital	Gen	Indiv	14	10	8	271	513
Culver City Hospital	Gen	Indiv	59	30	20	355	1,087
Delano, 4,573—Kern							
Delano Hospital	Gen	Indiv	18	No data supplied			
Diabla, 3,750—Tulare							
Alta District Hospital	Gen	Part	17	6	4	136	422
Dos Palos, 678—Merced							
Dos Palos Community Hosp.	Gen	Indiv	16	7	4	160	669
Downey, 15,000—Los Angeles							
Downey Community Hospital	Gen	NPAasn	35	24	14	372	1,470
Duarte, 2,000—Los Angeles							
Los Angeles Sanatorium	TB	NPAasn	210	232	...	...	179
Dunsmuir, 2,359—Siskiyou							
Dunsmuir Hospital and Sana- torium	Gen	Part	15	7	6	77	50
El Centro, 10,017—Imperial							
Imperial County Charity Hos- pital	Gen	County	93	20	4	65	869
U. S. Marine Corps Air Sta- on Dispensary	Gen	Navy	60	20	...	...	1,840
Edgewood, 16—Sonoma							
Edgewood State Home	MeDe	State	3,329	3,200	...	...	387
El Monte, 4,746—Los Angeles							
Ruth Home	Mat	NPAasn	135	45	15	13	70
El Toro, —Orange							
U. S. Marine Corps Air Sta- tion Dispensary	Gen	Navy	100	...	...	Estab. 1913	
Eureka, 17,055—Humboldt							
General Hospital	Gen	NPAasn	53	32	8	181	1,318
Humboldt County Hospital	Gen	County	261	150	6	38	1,086
Humboldt County School for the Tuberculous	TB	County	65	35	...	...	83
St. Joseph Hospital	Gen	Church	65	52	13	403	2,535
Fairfield, 1,312—Solano							
Solano County Hospital	Gen	County	100	90	10	90	964
Fort Bragg, 3,235—Mendocino							
Redwood Coast Hospital	Gen	NPAasn	27	13	8	95	568
Fowler, 1,531—Fresno							
Fowler Municipal Hospital	Gen	City	10	5	5	96	333
French Camp, 600—San Joaquin							
San Joaquin General Hospi- tal	Gen	County	700	401	38	616	7,131
Fresno, 69,685—Fresno							
Burnett Sanitarium	Gen	Corp	131	96	32	976	4,473
General Hospital of Fresno	Gen	County	540	403	31	675	5,895
County	Gen	Church	80	69	22	825	3,298
St. Agnes Hospital	Gen	Church	40	29	11	405	1,489
Fullerton, 10,412—Orange							
Fullerton Hospital	Gen	Church	40	29	11	405	1,489
Gilroy, 3,615—Santa Clara							
Wheeler Hospital	Gen	NPAasn	25	12	7	220	680
Glendale, 82,582—Los Angeles							
Glendale Sanitarium and Hos- pital	Gen	Church	225	219	40	1,583	6,848
Physicians and Surgeons Hos- pital	Gen	NPAasn	100	98	35	1,261	5,404
Grass Valley, 5,701—Nevada							
Community Hospital	Gen	NPAasn	20	12	6	100	652
W. C. Jones Memorial Hosp.	Gen	Indiv	30	8	3	45	346
Hamilton Field, —Marin							
Station Hospital	Gen	Army	66	25	...	...	1,005
Hanford, 8,231—Kings							
Hanford Sanitarium	Gen	Corp	28	25	8	316	1,211
Kings County Hospital	Gen	County	225	166	16	162	1,701
Sacred Heart Hospital	Gen	Church	25	16	10	268	1,102
Hawthorne, 8,263—Los Angeles							
Hawthorne Hospital	Gen	Part	35	32	15	685	1,405
Hayward, 6,736—Alameda							
Hayward Hospital	Gen	Indiv	31	17	14	758	1,267

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Healdsburg, 2,507—Sonoma							
Healdsburg General Hospital	Gen	NPAasn	25	No data supplied			
Hollister, 3,881—San Benito							
Hazel Hawkins Memorial Hos- pital	Gen	NPAasn	22	14	7	192	654
San Benito County Hospital	Gen	County	40	31	3	10	116
Holtville, 1,772—Imperial							
U. S. Naval Air Station Dis- pensary	Gen	Navy	18	...	...	Estab. 1913	
Hondo, 3,350—Los Angeles							
Rancho Los Amigos	Ment	County	2,881	2,608	...	...	2,759
Hoopa, 110—Humboldt							
Hoopa Valley Indian Hosp.	Gen	IA	20	11	6	25	206
Huntington Park, 28,618—Los Angeles							
Mission Hospital	Gen	Corp	42	39	10	851	1,900
Imolin, 20—Napa							
Napa State Hospital	Ment	State	4,015	3,868	...	...	973
Indio, 2,296—Riverside							
Castla Hospital	Gen	Indiv	26	17	7	218	894
Conchella Valley Hospital	Gen	Part	40	18	6	137	2,435
Inglewood, 30,111—Los Angeles							
Centinela Hospital	Gen	Indiv	55	53	12	539	2,351
Inglewood Woman's Hospital	Mat	Part	55	10	25	653	695
St. Erne Sanitarium	N&M	Indiv	200	198	...	...	300
Keene, 161—Kern							
Stony Brook Retreat	TB	County	102	93	...	...	103
King City, 1,764—Monterey							
Community Hospital	Gen	Indiv	24	13	6	115	734
Kingsburg, 1,564—Fresno							
Kingsburg Sanitarium	Gen	Indiv	16	9	4	119	523
La Crescenta, 3,000—Los Angeles							
Hillcrest Sanatorium	Unit of Olive View Sanatorium, Olive View						
La Jolla, —San Diego							
Scripta Memorial Hospital	Gen	NPAasn	44	37	6	345	1,633
Scripta Metabolic Clinic	Metab	NPAasn	33	28	...	...	1,295
La Vina, 25—Los Angeles							
La Vina Sanatorium	TB	NPAasn	50	48	...	...	44
Lindsay, 4,397—Tulare							
Lindsay Municipal Hospital	Gen	City	22	11	8	172	754
Livermore, 2,885—Alameda							
Arroyo del Valle Sanat.	TB	County	275	211	...	...	222
Livermore Sanitarium	N&M	Corp	146	104	...	...	496
St. Paul's Hospital	Gen	Indiv	23	20	6	135	658
U. S. Navy Air Station Dis- pensary	Gen	Navy	65	40	...	...	1,455
Veterans Adm'n. Facility	TB	Vet	365	258	...	...	731
Lodi, 11,670—San Joaquin							
Buchanan Hospital	Gen	Indiv	37	20	11	307	1,170
Mason Hospital	Gen	Indiv	26	20	6	172	920
Loma Linda, 2,560—San Bernardino							
Loma Linda Sanitarium and Hospital	Gen	Church	133	135	15	367	4,210
Lompoc, 3,379—Santa Barbara							
Lompoc Community Hosp.	Gen	NPAasn	35	...	10	Estab. 1913	
Long Beach, 164,271—Los Angeles							
Bixby Knolls Maternity Hos- pital	Mat	Part	24	22	27	810	818
Harriman Jones Clinic Hos- pital	Gen	Indiv	48	28	8	247	1,233
Long Beach Community Hos- pital	Gen	NPAasn	150	135	28	1,347	5,985
St. Mary's Long Beach Hos- pital	Gen	Church	100	98	18	1,241	5,092
Seaside Memorial Hospital	Gen	NPAasn	359	343	76	1,955	16,097
U. S. Naval Hospital	Gen	Navy	1,849	796	...	...	8,972
Los Alamitos, —Orange							
U. S. Naval Air Station Dis- pensary	Gen	Navy	54	...	...	...	...
Los Angeles, 1,564,277—Los Angeles							
Alvarado Hospital	Gen	NPAasn	30	19	6	76	2,072
Barlow Sanatorium	TB	NPAasn	100	98	...	...	70
California Babies' and Chil- dren's Hospital	Chil	NPAasn	30	5	...	...	340
California Hospital	Gen	Church	301	262	48	2,028	10,408
Cedars of Lebanon Hosp.	Gen	NPAasn	310	285	50	1,683	11,067
Children's Hospital	Chil	NPAasn	209	166	...	...	4,546
Eye and Ear Hospital	ENT	Corp	21	6	...	...	2,168
French Hospital	Gen	NPAasn	80	60	16	634	1,800
Golden State Hospital	Gen	Indiv	70	31	...	...	1,002
Hospital of the Good Samar- itans	Gen	Church	400	373	55	1,553	11,138
Juvenile Hall Hospital	Inst	County	121	87	...	...	6,656
Lincoln Hospital	Gen	NPAasn	31	25	14	635	1,456
Los Angeles County Hospital (Medical Unit)	Gen	County	3,794	2,087	217	2,587	43,001
Los Angeles County Jail Hos- pital	Inst	County	64	54	...	...	1,933
Los Angeles County Psycho- pathic Hospital	Unit of Los Angeles County Hospital						
Los Angeles Neurological In- stitute	N&M	Indiv	45	21	...	...	109
Los Angeles Sanitarium	Gen	Indiv	35	24	...	...	92
Methodist Hospital of South- ern California	Gen	Church	193	174	60	2,410	8,121
Orthopaedic Hospital	OrChil	NPAasn	75	47	...	...	1,558
Pahl Hospital	Gen	Indiv	15	10	3	103	694
Presbyterian Hospital—Olmsted Memorial	Gen	NPAasn	268	231	65	2,203	9,616
Queen of Angels Hospital	Gen	Church	325	274	64	2,310	11,316
St. Vincent's Hospital	Gen	Church	265	268	55	1,439	12,754

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bathrooms	Number of Births	Admissions
Lutheran Good Samaritan Hospital.....	Gen	Church	65	47	15	534	1,694
St. Luke Hospital.....	Gen	Church	95	90	30	909	3,891
Southern California Sanitarium for Nervous and General Diseases.....	See Las Encinas Sanitarium						
Woman's Hospital.....	Mat	NPAssn	14	11	14	388	391
Patton, 4,100—San Bernardino							
Patton State Hospital.....	Ment	State	3,943	3,677	..	...	1,173
Placerville, 3,664—Eldorado							
El Dorado County Hosp....	InstGen	County	60	46	4	6	76
Placerville Sanitarium.....	Gen	Part	30	15	8	100	602
Pomona, 23,539—Los Angeles							
Pomona Valley Community Hospital▲.....	Gen	NPAssn	82	38	29	474	1,907
Porterville, 6,270—Tulare							
New Porterville Hospital.....	Gen	Part	18	14	8	366	846
Portola, 2,000—Plumas							
Western Pacific Railway Hospital.....	Gen	NPAssn	21	16	4	119	601
Quincy, 1,800—Plumas							
Plumas County Hospital.....	Gen	County	45	30	6	33	425
Randsburg, 500—Kern							
Red District Hospital.....	Gen	Indiv	8	8	2	36	478
Red Bluff, 3,824—Tehama							
St. Elizabeth's Mercy Hosp..	Gen	Church	40	30	8	216	700
Tehama County Hospital....	Gen	County	54	38	4	20	295
Redding, 8,109—Shasta							
Shasta County Hospital....	InstGen	County	100	40	8	28	359
Redlands, 14,324—San Bernardino							
Redlands Community Hosp..	Gen	NPAssn	56	28	17	293	1,202
Redwood City, 12,453—San Mateo							
Canyon Sanatorium.....	TB	County	87	72	..	...	93
Hassler Health Home.....	TB	CyCo	275	225	..	...	193
Reedley, 3,170—Fresno							
Reedley Hospital.....	Gen	NPAssn	19	13	6	191	937
Represa, 250—Sacramento							
Folsom Prison Hospital.....	Inst	State	82	63	..	...	455
Richmond, 23,642—Contra Costa							
Permanente Field Hospital...	Indus	NPAssn	63	54	..	...	2,125
Richmond Hospital▲.....	Gen	Part	70	56	24	1,329	3,665
Riverside, 34,696—Riverside							
Riverside Community Hosp.▲	Gen	NPAAssn	99	78	38	1,076	3,494
Riverside County Hospital▲	GenTb	County	325	185	23	214	2,502
Sherman Institute Hospital..	Inst	IA	58	12	..	...	228
Rosemead, 5,560—Los Angeles							
Alhambra Sanatorium.....	N&M	Indiv	20	14	..	...	87
Ross, 1,751—Marin							
Ross General Hospital.....	GenTb	Corp	99	80	12	376	1,841
Sacramento, 105,353—Sacramento							
Mercy Hospital▲.....	Gen	Church	177	139	35	1,471	6,952
Sacramento County Hosp.▲▲	Gen	County	475	367	23	449	6,950
Sutter General Hospital▲.....	Gen	NPAssn	250	242	..	...	8,053
Sutter Maternity Hospital▲.....	Mat	NPAssn	75	63	80	2,453	2,789
Salinas, 11,586—Monterey							
El Sausal Sanitarium.....	Unit of Monterey County Hospital						
Monterey County Hospital▲	GenTb	County	230	188	10	153	1,978
Park Lane Hospital.....	Gen	NPAssn	39	35	12	426	1,419
Salinas Valley Hospital....	Gen	Indiv	26	26	9	352	1,203
San Andreas, 1,082—Calaveras							
San Andreas Hospital.....	Gen	Indiv	12	3	2	14	94
San Bernardino, 43,646—San Bernardino							
St. Bernardine's Hospital▲.....	Gen	Church	125	87	24	790	3,210
San Bernardino County Charity Hospital▲▲.....	Gen	County	321	259	17	244	3,476
San Diego, 203,341—San Diego							
Mercy Hospital▲.....	Gen	Church	325	286	99	4,636	13,776
North Island Family Hosp..	Gen	Navy	45	30	30	500	2,116
San Diego County General Hospital▲▲.....	Gen	County	587	482	13	362	6,574
U. S. Naval Air Station Dispensary.....	Gen	Navy	181	85	..	...	4,957
U. S. Naval Air Station Dispensary (Camp Kearney)...	Gen	Navy	50	...	...	...	...
U. S. Naval Hospital▲▲.....	Gen	Navy	9,006	5,344	102	266	39,106
Vauelein Home.....	Unit of San Diego County General Hosp.						
San Fernando, 9,094—Los Angeles							
San Fernando Hospital.....	Gen	Indiv	27	24	11	384	972
San Valle Lindo Sanatorium.....	TB	Indiv	52	48	..	...	60
Veterans Admin. Facility▲.....	TB	Vet	288	350	..	...	737
San Francisco, 634,536—San Francisco							
Children's Hospital▲▲.....	Gen	NPAssn	225	224	50	1,046	6,029
Chinese Hospital.....	Gen	NPAssn	50	76	9	211	1,078
Franklin Hospital▲▲.....	Gen	NPAssn	225	212	19	667	6,664
French Hospital▲▲.....	Gen	NPAssn	207	173	18	491	5,104
Greens' Eye Hospital▲.....	EXT	Part	35	16	..	...	1,210
Liabumham Hospital▲.....	Gen	NPAssn	77	59	..	...	2,238
Laguna Honda Home.....	InstGen	CyCo	900	774	..	...	1,009
Langley Porter Clinic.....	N&M	State	100	21	..	...	170
Letterman General Hosp.▲.....	Gen	Army	1,192	780	10	143	9,064
Mary's Help Hospital▲▲.....	Gen	Church	195	123	35	176	5,333
Mount Zion Hospital▲▲.....	Gen	NPAssn	163	127	30	717	4,972
Park Sanitarium.....	N&M	Corp	33	30	..	...	1,110
St. Elizabeth's Infant Hosp..	MatCh	Church	85	74	10	89	299
St. Francis Hospital▲.....	Gen	NPAssn	255	251	63	1,415	10,567
St. Joseph's Hospital▲.....	Gen	Church	244	181	43	1,697	7,298
St. Luke's Hospital▲▲.....	Gen	Church	200	174	25	728	6,678
St. Mary's Hospital▲▲.....	Gen	Church	325	295	50	1,957	9,675
San Francisco Hospital▲▲.....	GenTb	CyCo	1,346	1,068	50	614	16,243
San Francisco Polyclinic.....	Gen	NPAssn	15	12	..	...	652

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
San Francisco Psychopathic Hospital	Unit of San Francisco Hospital						
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	38 ..	...	167	
Southern Pacific General Hospital+▲	Indus	NPAssn	400	375 ..	...	6,121	
Stanford University Hospital+▲	Gen	NPAssn	326	279 16	1,118	9,588	
U. S. Marine Hospital+▲	Gen	USPHS	485	431 ..	...	5,211	
U. S. Naval Hospital+▲	Gen	Navy	1,061	823 ..	...	10,926	
University of California Hospital+▲	Gen	State	279	220 30	817	7,598	
Veterans Admin. Facility+▲	Gen	Vet	310	120 ..	...	1,138	
Sanger, 1,017—Fresno	Gen	Indiv	17	10 5	201	775	
Sanitarium, 500, Napa							
St. Helena Sanitarium and Hospital	Gen	Church	135	109 8	211	3,165	
San Jacinto, 1,356—Riverside	Gen	IA	34	16 3	31	261	
Soboba Indian Hospital	Gen	IA					
San Jose, 68,457—Santa Clara							
Alum Rock Sanitarium	TB	Corp	65	59 ..	...	292	
O'Connor Sanitarium+▲	Gen	Church	116	103 30	1,224	1,519	
San Jose Hospital+▲	Gen	NPAssn	148	114 46	1,360	5,082	
Santa Clara County Hospital+▲	GenTb	County	110	310 30	371	4,135	
Santa Clara County Sanat.	Unit of Santa Clara County Hospital						
Sunnyholme Preventorium	Unit of Santa Clara County Hospital						
San Leandro, 11,691—Alameda							
Fairmont Hospital of Alameda County+▲	GenTb	County	736	728 ..	...	1,125	
San Luis Obispo, 8,881—San Luis Obispo							
Mountain View Hospital	Gen	Indiv	10	18 8	273	987	
San Luis Obispo County Tuberculosis Sanatorium	Unit of San Luis Obispo General Hospital						
San Luis Obispo General Hospital	GenTb	County	65	41 9	136	1,084	
San Luis Sanitarium	Gen	Indiv	25	19 5	161	1,200	
San Mateo, 19,113—San Mateo							
Community Hospital of San Mateo County+▲	Gen	County	201	102 13	86	1,779	
Mills Memorial Hospital	Gen	Church	124	122 38	1,225	5,534	
San Pedro, —Los Angeles							
San Pedro Hospital+▲	Gen	Corp	115	105 26	1,149	1,421	
Station Hospital+▲	Gen	Army	86	35 ..	...	1,288	
San Quentin, 5,88—Marin							
Charles L. Neumiller Memorial Hospital	Inst	State	175	99 ..	...	1,087	
Rafael, 8,573—Marin							
Marin County Hospital and							
San Rafael Cottage Hospital	Gen	Indiv	45	40 16	377	2,987	
Santa Barbara, 31,958—Santa Barbara							
St. Francis Hospital+▲	Gen	Church	85	68 15	350	3,277	
Santa Barbara Cottage Hospital+▲	Gen	NPAssn	165	123 25	408	4,028	
Santa Barbara General Hospital+▲	Gen	County	300	175 12	131	1,161	
U. S. Marine Corps Air Station Dispensary	Gen	Navy	54	...	...	...
Santa Cruz, 16,826—Santa Cruz							
Santa Cruz County Hospital	Gen	County	164	129 8	51	1,233	
Santa Cruz Hospital	Gen	Corp	35	27 12	115	1,321	
Sisters Hospital	Gen	Church	28	16 7	90	590	
U. S. Naval Convalescent Hospital	Conv	Navy	936	718 ..	...	2,593	
Santa Maria, 8,522—Santa Barbara							
Our Lady of Perpetual Help Hospital	Gen	Church	50	35 14	483	1,825	
Santa Monica, 53,500—Los Angeles							
St. John's Hospital	Gen	Church	102	10 48	612	1,485	
Santa Monica Hospital+▲	Gen	Church	178	165 42	1,423	7,970	
Santa Rosa, 12,605—Sonoma							
Eliza Tanner Hospital	Gen	Part	20	15 5	268	955	
Sonoma County Hospital+▲	GenTb	County	421	315 11	151	2,217	
Scott, 2,200—Humboldt							
Scottia Hospital	Gen	NPAssn	32	18 1	91	658	
Selma, 3,667—Fresno							
Selma Sanitarium	Gen	Corp	21	18 5	...	1,127	
Shasta Dam, 750—Shasta							
Shasta Dam Hospital+▲	Indus	Corp	25	12 ..	...	574	
Shoemaker (Oakland P. O.), —Alameda							
U. S. Naval Hospital+▲	Gen	Navy	3,000	...	...	Estab. 1943	
Sonoma, 2,257—Tulolumne							
Sonoma Hospital	Gen	Indiv	23	11 4	86	591	
Tuolumne County Hosp.	Inst-Gen	County	41	24 1	14	297	
South Gate, 26,945—Los Angeles							
Suburban Hospital	Gen	Corp	50	38 31	801	1,731	
South Pasadena, 11,356—Los Angeles							
Pasadena Sanitarium	N&M	Indiv	75	53 ..	...	127	
South San Francisco, 6,629—San Mateo							
South San Francisco Hosp.	Gen	Corp	36	24 12	216	1,479	
Spadra, 275—Los Angeles							
Pacific Colony	MeDe	State	1,821	1,524 ..	...	251	
Springville, 665—Tulare							
Tulare-Kings Counties Joint Tuberculosis Hospital	TB	Counties	108	115 ..	...	79	
Stockton, 61,711—San Joaquin							
Dameron Hospital	Gen	Corp	78	68 12	472	3,029	
St. Joseph's Home and Hospital+▲	Gen	Church	95	85 22	1,090	4,152	
Stockton State Hospital	Ment	State	3,793	4,203 ..	...	1,685	

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Susanyville, 1,575—Lassen							
Riverside Hospital	Gen	Indiv	40	10 6	69	720	
Talmage, 350—Mendocino							
Mendocino State Hospital+▲	Ment	State	3,084	2,913 ..	...	600	
Tehachapi, 1,264—Kern							
Tehachapi Valley Hospital	Gen	Indiv	15	9 4	63	512	
Torrance, 9,950—Los Angeles							
Jared Sidney Torrance Memorial Hospital+▲	Gen	NPAssn	45	38 20	679	2,022	
Trona, 775—San Bernardino							
Trona Hospital	Gen	NPAssn	20	16 6	73	800	
Tulare, 8,259—Tulare							
East Tulare Hospital	Gen	Indiv	12	8 12	388	518	
Tulare County General Hosp.	Gen	County	103	48 15	117	1,181	
Tulare Hospital	Gen	Indiv	24	16 4	7	919	
Turlock, 4,889—Stanislaus							
Emanuel Hospital	Gen	Church	40	33 11	256	1,769	
Lillian Collins Hospital	Gen	Indiv	18	12 6	110	773	
Upland, 6,316—San Bernardino							
San Antonio Community Hospital+▲	Gen	NPAssn	66	50 18	526	2,240	
Vallejo, 20,072—Solano							
Vallejo General Hospital	Gen	Part	75	59 24	1,686	4,350	
Ventura, 13,261—Ventura							
Bard Memorial Hospital	Unit of Ventura County Hospital						
Foster Memorial Hospital+▲	Gen	NPAssn	65	46 16	218	1,751	
Ventura County Hospital+▲	GenTb	County	328	185 8	149	2,815	
Veterans Home, 1,866—Napa							
Veterans Home Hospital+▲	Inst	State	256	181 ..	...	1,038	
Vineburg, 100—Sonoma							
Burdale Hospital	Gen	Indiv	15	7 4	154	574	
Visalia, 8,004—Tulare							
Visalia Municipal Hospital	Gen	City	48	28 15	413	1,546	
Watsonville, 8,917—Santa Cruz							
Watsonville Hospital	Gen	Corp	37	27 10	420	1,400	
Weed, 2,600—Siskiyou							
Weed Hospital	Gen	Part	18	No data supplied			
Welman, 125—Placer							
Welman Joint Sanatorium	TB	Counties	567	482 ..	...	592	
West Los Angeles, —Los Angeles							
Veterans Admin. Facility+▲	GenMent	Vet	1,080	962 ..	...	7,578	
Westwood, 5,000—Lassen							
Westwood Hospital	Gen	NPAssn	42	15 9	126	992	
Willits, 1,625—Mendocino							
Frank R. Howard Memorial Hospital	Gen	NPAssn	22	13 5	68	561	
Woodlake, 1,146—Tulare							
Sequoia Hospital	Gen	Indiv	9	4 4	96	1,390	
Woodland, 6,637—Yolo							
Woodland Clinic Hospital+▲	Gen	Part	65	54 10	277	1,936	
Yosemite National Park, 500—Mariposa							
Lewis Memorial Hospital	Gen	Fed	13	...	...	Reorganized	
U. S. Naval Convalescent Hospital	Conv	Navy	615	...	...	Estab. 1943	
Yreka, 2,485—Siskiyou							
Siskiyou County General Hospital	Gen	County	165	120 14	133	1,580	
Yuba City, 4,968—Sutter							
Sutter County Hospital	Gen	County	45	28 8	94	544	
Yuba City General Hospital	Gen	Indiv	25	18 6	384	1,219	

Related Institutions

Altadena, —Los Angeles							
Pasadena Preventorium	Conv	NPAssn	38	23 ..	...	33	
Artesia, 3,891—Los Angeles							
Pioneer Sanitarium	N&M	Indiv	53	49 ..	...	91	
Belmont, 1,229—San Mateo	TB	NPAssn	20	16 ..	...	46	
Chas. S. Howard Foundation	N&M	Part	35	35 ..	...	27	
The Hillwell							
Claremont, 3,057—Los Angeles							
Claremont Colleges Infirmary	Inst	NPAssn	24	2 ..	...	519	
Duarte, 2,600—Los Angeles							
Santa Teresita Sanatorium	TB	Church	120	110 ..	...	173	
Eureka, 17,055—Humboldt							
Humboldt County Isolation Hospital	Iso	County	16	3 ..	...	96	
Glendale, 82,582—Los Angeles							
Villa Shaw Rest Home	N&M	Indiv	25	24 ..	...	20	
La Crescenta, 3,600—Los Angeles							
Kimball Sanitarium	N&M	Indiv	35	26 ..	...	145	
Lancaster, 2,100—Los Angeles							
Antelope Valley Sanatorium and Hospital	TB	Part	118	...	...	...
Larkspur, 1,558—Marin							
Larkspur Convalescent Hosp.	Conv	Indiv	20	7 ..	...	78	
Lincoln, 2,044—Placer							
Joslin's Sanatorium	N&M	Indiv	15	12 ..	...	12	
Long Beach, 164,271—Los Angeles							
California Sanitarium	Conv	Indiv	53	53 ..	...	318	
Los Angeles, 1,501,277—Los Angeles							
Chase Diet Sanitarium	Conv	Part	22	20 ..	...	110	
Doughty Sanatorium	TB	Indiv	14	14 ..	...	25	
Florence Crittenton Home	Mat	NPAssn	44	26 6	80	89	
Resthaven	N&M	NPAssn	45	33 ..	...	153	
St. Anne's Maternity Hosp.	Mat	Church	10	9 16	230	226	
St. Barnabas Rest Home for Men	Conv	Church	15	8 ..	...	177	

CALIFORNIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Salvation Army Booth Memorial Hospital	Mat	Church	15	14	9	198	201
Twentieth Century Sanit.	N&M	Indiv	45	45	..	..	40
Monrovia, 12,807—Los Angeles							
Mary Knoll Sanitarium	TB	Church	41	40	..	..	51
National City, 10,344—San Diego							
Hillcrest Manor	N&M	Indiv	50	45	..	..	70
Oakland, 302,163—Alameda							
Salvation Army Women's Home and Hospital	Mat	Church	65	65	38	175	216
Pacifica, —Los Angeles							
Independent Order of Foresters California Tuberculosis Sanitarium	TB	NPAssn	60	No data supplied			
Rosemead, 5,500—Los Angeles							
Rosemead Lodge	N&M	Indiv	40	36	..	..	238
Ross, 1,751—Marin							
Cedars-Development School ..	McDe	Corp	41	44	..	..	12
San Diego, 203,341—San Diego							
Fraser Hall Hospital	Conv	Part	25	17	..	..	194
San Francisco, 634,536—San Francisco							
Garden Nursing Home	Incur	NPAssn	81	80	..	..	132
San Gabriel, 11,867—Los Angeles							
Mission Lodge Sanitarium	N&M	Indiv	60	63	..	..	27
San Marino Sanitarium	N&M	Part	75	39	..	..	43
San Jose, 68,457—Santa Clara							
Beale Sanitarium	N&M	Indiv	10	9	..	..	12
San Mateo, 19,403—San Mateo							
San Mateo Preventorium	TB	NPAssn	28	21	..	..	19
Santa Barbara, 31,958—Santa Barbara							
La Loma Feliz	Chil	NPAssn	22	20	..	..	16
Santa Monica, 53,500—Los Angeles							
Loamshire Convalescent Hospital and Rest Home	Conv	Corp	28	18	..	..	63
Stanford University, 720—Santa Clara							
Stanford Convalescent Home	Chil	NPAssn	80	69	..	..	153
Sunland, —Los Angeles							
Sunland Sanatorium	TB	Corp	60	55	..	..	135
Tujunga, —Los Angeles							
Reslock Health Retreat	Chil	Indiv	74	30	..	..	63
Verdugo City, 1,500—Los Angeles							
Rockhaven Sanitarium	N&M	Indiv	100	No data supplied			

COLORADO

Hospitals and Sanatoriums

Alamosa, 5,613—Alamosa							
Alamosa Community Hosp...	Gen	Church	45	26	10	320	2,342
Aspen, 777—Pitkin							
Citizens' Hospital	Gen	NPAssn	15	6	2	7	65
Boulder, 12,958—Boulder							
Boulder-Colorado Sanitarium and Hospital*▲	Gen	Church	101	63	8	102	1,798
Boulder County Hospital	Gen	County	46	34	4	46	454
Community Hospital▲	Gen	NPAssn	45	32	12	161	1,482
Brush, 2,481—Morgan							
Eben-Ezer Hospital	Gen	Church	25	13	8	112	595
Burlington, 1,280—Kit Carson							
Hayes General Hospital	Gen	Indiv	17	10	4	53	566
Canon City, 6,690—Fremont							
Colorado Hospital	Gen	Indiv	28	21	7	107	726
Colorado State Penitentiary Hospital	Inst	State	45	29	..	..	1,087
St. Thomas More Hospital	Gen	Church	42	14	6	118	493
Cheyenne Wells, 695—Cheyenne							
Cheyenne County Hospital...	Gen	Indiv	37	5	6	47	322
Climax, 500—Lake							
Climax Molybdenum Company Hospital	Indus	NPAssn	10	2	..	..	300
Colorado Springs, 36,789—El Paso							
Colorado Springs Psychopathic Hospital	N&M	Indiv	150	132	..	..	142
El Paso Contagious and Observation Hospital	Unit of Memorial Hospital						
Glockner Sanatorium and Hospital*▲	GenTb	Church	175	149	22	462	2,739
Memorial Hospital*▲	Gen	City	87	95	19	529	2,814
St. Francis Hospital and Sanatorium*▲	GenTb	Church	160	124	22	498	2,451
Union Printers Home and Tuberculosis Sanatorium...	GenTb	NPAssn	455	282	..	..	173
Cripple Creek, 2,358—Teller							
Cripple Creek Hospital	Gen	NPAssn	25	4	6	32	2.8
Del Norte, 1,923—Rio Grande							
St. Joseph's Hospital and Sanatorium	Gen	Church	45	21	11	120	774
St. Mary's Pavilion	Unit of St. Joseph's Hospital and Sanat.						
Delta, 3,717—Delta							
Western Slope Memorial Hospital	Gen	NPAssn	11	5	3	38	216
..							
..	TB	Church	48	28	..	..	33
..	Gen	NPAssn	55	45	10	83	1,702
..	Chil	NPAssn	225	148	..	..	5,833
Colorado General Hosp.*▲	Gen	State	245	163	25	519	3,718
Colorado Psychopathic Hospital*▲	Mont	State	78	78	..	..	884
Denver General Hospital*▲	GenTb	CyCo	664	281	36	376	8,547
Ex-Patients' Tubercular Home	TB	NPAssn	60	36	..	..	53

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fitzsimons General Hosp.*▲	GenTb	Army	1,185	888	6	77	7,344
Mercy Hospital*▲	Gen	Church	225	215	30	936	8,906
Mount Airy Sanitarium*▲	N&M	Part	54	40	..	..	642
National Jewish Hospital*▲	TB	NPAssn	235	227	..	..	182
Porter Sanitarium and Hospital*▲	Gen	Church	100	95	23	707	3,332
Presbyterian Hospital*▲	Gen	Church	160	140	30	1,054	5,947
Robert W. Speer Memorial Hospital for Children	Unit of	Denver General Hospital					
St. Anthony Hospital*▲	Gen	Church	190	155	30	1,110	6,440
St. Joseph's Hospital*▲	Gen	Church	246	232	54	1,344	7,633
St. Luke's Hospital*▲	Gen	Church	250	207	40	1,346	8,349
Steele Memorial Hospital	Iso	CyCo	80	11	..	..	574
Durango, 5,887—LaPlata							
LaPlata County Hospital	Gen	County	24	8	5	..	..
Mercy Hospital*▲	Gen	Church	55	38	9	170	2,401
Edgewater, 1,048—Jefferson							
Craig Colony	TB	NPAssn	50	33	..	..	26
Sands House	TB	NPAssn	39	28	..	..	27
Englewood, 9,680—Arapahoe							
Federal Correctional Institution	Inst	USPHS	24	15	..	..	466
Swedish National Sanatorium	TB	NPAssn	64	57	..	..	95
Fairplay, 739—Park							
Fairplay Hospital	Gen	Indiv	14	4	2	8	163
Fort Collins, 12,251—Larimer							
Larimer County Hospital▲	Gen	County	52	42	8	413	1,913
Fort Logan, —Arapahoe							
Station Hospital▲	Gen	Army	74	39	..	..	677
Fort Lyon, 1,180—Bent							
Veterans Admin. Facility▲	Ment	Vet	1,056	1,019	..	..	169
Fort Morgan, 4,884—Morgan							
Fort Morgan Hospital	Gen	Indiv	25	10	8	146	552
Fruita, 1,466—Mesa							
Fruita Community Hospital	Gen	Indiv	12	4	3	42	235
Glenwood Springs, 2,253—Garfield							
Dr. Porter's Hospital	Gen	Part	18	12	5	78	500
U. S. Naval Convalescent Hospital	Conv	Navy	115	..	..	..	Estab. 1943
Grand Junction, 12,470—Mesa							
St. Mary's Hospital*▲	Gen	Church	65	45	15	345	1,730
Greeley, 15,995—Weld							
Weld County Hospital	Gen	County	108	83	20	572	3,084
Gunnison, 2,177—Gunnison							
Community Hospital	Gen	Part	25	9	6	51	320
Hayden, 640—Routt							
Solandt Memorial Hospital	Gen	NPAssn	16	12	4	64	388
Holyoke, 1,150—Phillips							
Holyoke Hospital	Gen	Indiv	9	5	4	56	304
Ignacio, 555—LaPlata							
Edward T. Taylor Indian Hospital	Gen	IA	21	8	4	25	284
Julesburg, 1,619—Sedgwick							
Community Hospital	Gen	NPAssn	10	3	6	76	190
La Junta, 7,040—Otero							
Atchison, Topeka and Santa Fe Railroad Hospital▲	Indus	NPAssn	36	21	..	..	485
Mennonite Hospital and Sanitarium	Gen	Church	71	66	17	353	1,703
Lamar, 4,445—Prowers							
Charles Maxwell Hospital	Gen	Corp	50	22	8	285	1,190
Leadville, 4,774—Lake							
St. Vincent Hospital	Gen	Church	43	17	10	120	750
Longmont, 7,400—Boulder							
Longmont Hospital▲	Gen	Indiv	33	18	7	103	774
St. Vrain Hospital	Gen	Indiv	25	14	5	55	426
Loveland, 6,145—Larimer							
Loveland Hospital and Clinic	Gen	Indiv	10	7	5	50	334
Montrose, 4,764—Montrose							
St. Luke's Hospital	Gen	Indiv	16	9	8	108	373
Oak Creek, 1,769—Routt							
Oak Creek Hospital	Gen	Indiv	15	7	3	58	263
Ouray, 951—Ouray							
Bates Hospital and Sanit.	Gen	Corp	16	7	3	6	270
Pueblo, 52,162—Pueblo							
Colorado State Hospital*▲	Ment	State	4,463	4,200	..	..	720
Corwin Hospital*▲	Gen	NPAssn	206	137	22	374	4,315
Parkview Hospital*▲	Gen	NPAssn	96	62	20	418	2,618
St. Mary Hospital*▲	Gen	Church	184	116	28	522	2,817
Woodcroft Hospital▲	N&M	Corp	130	58	..	..	150
Rocky Ford, 3,494—Otero							
Physicians Hospital	Gen	NPAssn	10	9	5	128	364
Salida, 4,969—Chaffee							
Denver and Rio Grande Western Railroad Hospital▲	Gen	NPAssn	50	54	7	141	1,832
Spivak, 350—Jefferson							
Sanatorium of the Jewish Consumptives' Relief Society*▲	TB	NPAssn	300	229	..	..	162
Sterling, 7,411—Logan							
Good Samaritan Hospital	Gen	Church	30	20	10	156	1,019
St. Benedict Hospital	Gen	Church	33	19	9	218	1,062
Trinidad, 13,223—Las Animas							
Mount San Rafael Hosp.*▲	Gen	Church	75	23	10	185	1,234
Walsenburg, 5,855—Huerfano							
Lamme Brothers Hospital	Gen	Part	20	9	3	46	378
Wheat Ridge, 3,500—Jefferson							
Evangelical Lutheran Sanat. TB	Chil	Church	110	88	..	..	63

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Woodmen, 250—El Paso							
Modern Woodmen of America Sanatorium*.....	TB	NPAasn	155	58	..	...	70
Wray, 2,661—Yuma							
Wray Hospital.....	Gen	Indlv	15	5	6	96	377
Related Institutions							
Boulder, 12,958—Boulder							
Mesa Vista Sanatorium.....	TB	Part	55	39	..	...	11
Colbran, 501—Mesa							
Platau Valley Congregation Hospital.....	Gen	Church	13	7	1	29	235
Colorado Springs, 35,729—El Paso							
Cragmore Sanatorium.....	TB	NPAasn	125	10	..	...	110
Denver, 322,412—Denver							
Florence Crittenton Home.....	Mat	NPAasn	50	30	50	85	92
St. Francis Sanatorium.....	TB	Church	23	21	..	...	55
Salvation Army Woman's Home and Hospital.....	Mat	Church	50	25	18	75	97
Elkwood, 9,680—Arapahoe							
Castello Home.....	TB	NPAasn	16	7	..	...	3
Temple Sanatorium.....	N&M	Indlv	50	50	..	...	125
Fauler, 504—Kit Carson							
Flarler Hospital.....	Gen	Indlv	10	5	4	54	291
Golden, 3,175—Jefferson							
Hospital—State Industrial School for Boys.....	Inst	State	25	5	..	...	423
Grand Junction, 12,479—Mesa							
State Home and Training School for Mental Defectives.....	MeDe	State	150	122	..	...	18
Greeley, 15,925—Weld							
Island Grove Hospital.....	Instlso	County	65	16	..	...	87
Homelake, 225—Rio Grande							
Colorado State Soldiers and Sailors Home.....	Inst	State	35	15	..	...	82
Ridge, 160—Jefferson							
State Home and Training School for Mental Defectives.....	MeDe	State	350	320	..	...	30

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Bridgeport, 147,121—Fairfield							
Bridgeport Hospital*.....	Gen	NPAasn	312	303	71	2,225	10,569
Englewood Hospital.....	IsolTh	City	150	25	..	...	491
Park City Hospital.....	Gen	NPAasn	35	50	10	198	1,045
St. Vincent's Hospital*.....	Gen	Church	271	212	51	244	9,278
Bristol, 20,167—Hartford							
Bristol Hospital*.....	Gen	NPAasn	150	100	50	873	4,612
Robert O. Geer Memorial Hospital.....	Gen	NPAasn	25	20	6	61	832
romwell, 3,251—Middlesex							
Cromwell Hall.....	Nerv	Corp	33	17	..	...	160
Danbury, 22,329—Fairfield							
Danbury Hospital*.....	Gen	NPAasn	180	113	40	816	3,997
Federal Correctional Institution.....	Inst	Fed	33	17	..	...	379
Merby, 10,287—New Haven							
Griffin Hospital.....	Gen	NPAasn	91	77	21	193	3,562
Greens Farms, 275—Fairfield							
Hall-Brooke Sanitarium.....	N&M	Corp	75	41	..	...	161
Greenwich, 6,000—Fairfield							
Blythwood.....	N&M	Corp	79	58	..	...	113
Greenwich Hospital*.....	Gen	NPAasn	125	77	23	611	2,764
St. Luke's Convalescent Hospital.....	Conv	Church	110	83	..	...	888
Hartford, 166,267—Hartford							
Avery Convalescent Hospital Unit of Hartford Hospital							262
Cedarcrest Sanatorium.....	TB	State	336	305	..	...	21,706
Hartford Hospital*.....	Gen	NPAasn	800	620	200	1,710	21,706
Institute of Living (Neuro-Psychiatric Institute of the Hartford Retreat)*.....	N&M	NPAasn	300	329	..	...	715
Mount Sinai Hospital*.....	Gen	NPAasn	54	11	6	118	1,655
Municipal Hospitals*.....	Genlso	City	315	219	31	72	3,700
St. Francis Hospital*.....	Gen	Church	525	416	166	2,482	21,517
Kent, 1,215—Litchfield							
Kent School Infirmary.....	Inst	NPAasn	26	6	..	...	106
Lakeville, 1,800—Litchfield							
Hotchkiss School Infirmary.....	Inst	NPAasn	38	9	..	...	518
Manchester, 23,709—Hartford							
Manchester Memorial Hosp.....	Gen	NPAasn	101	96	20	617	3,252
Meriden, 59,391—New Haven							
Meriden Hospital*.....	Gen	NPAasn	139	105	38	1,037	3,802
Underhill, Meriden State Tuberculosis Sanatorium*.....	TB	State	313	291	..	...	407
Middletown, 26,495—Middlesex							
Connecticut State Hospital*.....	Ment	State	3,155	2,951	..	...	707
Middlesex Hospital*.....	Gen	NPAasn	152	126	27	1,007	1,314
Millford, 16,429—New Haven							
Millford Hospital.....	Gen	NPAasn	50	31	15	402	1,287
New Britain, 68,685—Hartford							
New Britain General Hospital*.....	Gen	NPAasn	220	183	15	2,042	7,399
New Haven, 160,665—New Haven							
Dr. J. H. Evans' Private Hospital.....	Gen	Indlv	7	6	..	...	207
Grace Hospital*.....	Gen	NPAasn	230	158	61	1,596	6,034
Hospital of St. Raphael*.....	Gen	Church	310	268	60	1,897	7,986
New Haven Hospital*.....	Gen	NPAasn	539	416	50	1,613	11,507

CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Psychiatric Clinic, Yale School of Medicine.....	Unit of New Haven Hospital						
Sarah Wey Thompson Memorial Pavilion.....	Unit of New Haven Hospital						
Newington, 5,419—Hartford							
Newington Home for Crippled Children.....	Orth	NPAasn	180	137	..	...	93
Veterans Admin. Facility.....	Vet	Gen	329	262	..	...	2,891
New London, 30,156—New London							
Home Memorial Hospital.....	Gen	NPAasn	53	39	12	227	1,251
Lawrence and Memorial Asolated Hospital*.....	Gen	NPAasn	239	158	52	1,285	4,814
Dr. Lena's Surgical Hospital Surg	Indlv		26	21	..	...	1,639
U. S. Const Guard Academy Hospital.....	Gen	USPHS	30	6	..	...	370
New Milford, 3,000—Litchfield							
New Milford Hospital.....	Gen	NPAasn	26	14	6	124	505
Newtown, 604—Fairfield							
Fairfield State Hospital.....	Ment	State	2,237	2,150	..	...	877
Norwalk, 38,819—Fairfield							
Norwalk General Hospital*.....	Gen	NPAasn	181	135	38	1,167	5,180
Norwich, 23,652—New London							
Norwich State Hospital*.....	Ment	State	2,600	2,445	..	...	753
Norwich State Tuberculosis Sanatorium (Uncus-On-Thames)*.....	TB	State	433	392	..	...	338
William W. Backus Hosp.*.....	Gen	NPAasn	131	77	29	977	3,724
Portland, 2,560—Middlesex							
Elmcrest Manor.....	N&M	Indlv	35	35	..	...	232
Putnam, 7,775—Windham							
Day Kimball Hospital.....	Gen	NPAasn	71	63	22	478	2,094
Rockville, 7,572—Tolland							
Rockville City Hospital.....	Gen	NPAasn	35	27	6	222	672
Sharon, 500—Litchfield							
Sharon Hospital.....	Gen	NPAasn	40	15	7	181	708
Shelton, 10,171—Fairfield							
Laurel Heights State Tuberculosis Sanatorium*.....	TB	State	382	351	..	...	522
Southbury, 1,100—New Haven							
Southbury Training School.....	MeDe	State	1,500	991	..	...	233
Southington, 5,088—Hartford							
Bradley Memorial Hospital.....	Gen	NPAasn	12	10	..	...	349
Stafford Springs, 3,401—Tolland							
Cyril and Julia C. Johnson Memorial Hospital.....	Gen	NPAasn	50	30	12	267	1,083
Stamford, 17,938—Fairfield							
Dr. Barnes Sanitarium.....	N&M	Corp	50	35	..	...	111
St. Joseph Hospital.....	Gen	Church	90	67	40	613	2,397
Stamford Hall.....	N&M	Corp	150	130	..	...	205
Stamford Hospital*.....	Gen	NPAasn	270	117	54	852	5,294
Tophamsee Grange.....	N&M	Corp	26	8	..	...	3
Torrington, 26,988—Litchfield							
Charlotte Hungerford Hosp.*.....	Gen	NPAasn	133	94	27	815	2,483
Wallingford, 11,125—New Haven							
Gaylord Farm Sanatorium*.....	TB	NPAasn	144	110	..	...	222
Waterbury, 99,314—New Haven							
St. Mary's Hospital*.....	Gen	Church	327	236	60	1,826	9,619
Waterbury Hospital*.....	Gen	NPAasn	310	250	62	1,562	8,144
Waterford, 100—New London							
The Seaside.....	TbChil	State	145	119	..	...	23
Westport, 8,258—Fairfield							
Westport Sanitarium.....	N&M	Corp	100	73	..	...	193
Willimantic, 12,101—Windham							
Windham Community Memorial Hospital*.....	Gen	NPAasn	96	65	22	534	2,869
Winsted, 7,671—Litchfield							
Litchfield County Hospital.....	Gen	NPAasn	69	43	16	301	1,407
Related Institutions							
Avon, 1,000—Hartford							
Avon School Infirmary.....	Inst	NPAasn	12	4	..	...	220
Bridgeport, 147,121—Fairfield							
Hillside Home and Hospital.....	Chr	City	300	260	..	...	695
East Lyme, 3,338—New London							
Ida Thompson Hospital.....	Unit of Connecticut State Farm for Women, Niantic						
Greenwich, 6,000—Fairfield							
Municipal Hospital.....	ChrIso	City	72	32	2	...	113
Mansfield Depot, 300—Tolland							
Mansfield State Training School and Hospital.....	MeDe	State	1,200	1,152	..	...	152
Meriden, 39,391—New Haven							
Connecticut School for Boys.....	Inst	State	23	6	..	...	250
New Britain, 68,685—Hartford							
New Britain Memorial Hosp.....	Gen	Church	50	31	..	...	122
New Canaan, 6,221—Fairfield							
Silver Hill Foundation.....	Nerv	Corp	35	25	..	...	171
New Haven, 160,665—New Haven							
Jewish Home for the Aged.....	Inst	NPAasn	96	95	..	...	21
Yale Infirmary.....	Inst	NPAasn	30	13	..	...	1,670
Niantic, 1,312—New London							
Connecticut State Farm for Women.....	Inst	State	75	60	8	59	191
Rocky Hill, 2,679—Hartford							
State Veterans Hospital.....	Inst	State	284	112	..	...	1,417
Waterbury, 99,314—New Haven							
Connecticut Children's Hosp.....	MeDe	NPAasn	125	92	..	...	94
West Hartford, 33,776—Hartford							
St. Agnes Home.....	Mat	Church	9	4	6	70	102

CONNECTICUT—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
West Haven, 30,021—New Haven							
West Haven Convalescent Home	Conv	Indiv	14	12	..	...	10
West Suffield, 700—Hartford							
Travelers Rest House	Conv	NPAssn	40	12	..	...	72
Wethersfield, 9,644—Hartford							
Connecticut State Prison Hospital	Inst	State	30	14	..	...	205

DELAWARE

Hospitals and Sanatoriums

Dover, 5,517—Kent							
Kent General Hospital	Gen	NPAssn	60	41	10	302	1,655
Farnhurst, 500—New Castle							
Delaware State Hospital	Ment	State	1,250	1,207	..	...	306
Fort Dupont (Delaware City P.O.)—New Castle							
Station Hospital	Gen	Army	40	8	..	...	367
Lewes, 2,246—Sussex							
Beebe Hospital	Gen	NPAssn	104	46	15	193	1,515
Marshallton, 1,500—New Castle							
Brandywine Sanatorium	TB	State	124	115	..	...	100
Edgewood Sanatorium	TB	State	63	51	..	...	83
Middletown, 1,529—New Castle							
Maternity Home	Mat	Indiv	20	20	10	40	102
Millford, 4,214—Sussex							
Millford Memorial Hospital	Gen	NPAssn	100	59	18	403	2,312
Smyrna, 1,570—Kent							
Delaware State Welfare Home Hospital	Inst	Gen State	378	363	7	...	170
Wilmington							
Alfred							
The Nemours Foundation				46	..	...	100
Delaware				236	52	1,542	7,929
Doris Mc							
Gross P.				8	6	58	301
Memorial Hospital	Gen	NPAssn	192	129	38	842	4,708
St. Francis Hospital	Gen	Church	103	55	30	415	2,038
Wilmington Gen. Hosp.	Gen	NPAssn	142	106	30	1,321	4,143

Related Institutions

Marshallton, 1,500—New Castle							
Sunnybrook Cottage	TbChil	NPAssn	22	19	..	...	15
Stockley, 68—Sussex							
Delaware Colony	McDe	State	503	446	..	...	31

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums

Washington, 796,000							
Central Dispensary and Emergency Hospital	Gen	NPAssn	310	232	..	...	7,332
Children's Hospital	Chil	NPAssn	220	131	..	...	6,398
Columbia Hospital for Women and Lying-In Asylum	GynMat	NPAssn	125	105	96	3,337	4,942
District of Columbia Reformatory and Workhouse Hospital (Lorton, Va., P. O.)	Inst	City	120	41	..	...	2,929
Doctors Hospital	Gen	Corp	238	198	66	1,385	8,046
Eastern Dispensary and Casualty Hospital	Gen	NPAssn	150	84	..	...	3,559
Episcopal Eye, Ear and Throat Hospital	ENT	Church	100	58	..	...	6,383
Freedmen's Hospital	Gen	TbUSPHS	402	288	48	1,271	5,438
Gallinger Municipal Hospital	Gen	TbCity	1,446	946	154	2,098	15,082
Garfield Memorial Hospital	Gen	NPAssn	365	372	124	3,184	10,394
Georgetown University Hospital	Gen	NPAssn	230	197	64	1,921	7,269
George Washington University Hospital	Gen	NPAssn	91	73	23	791	2,903
Howard University Hospital	Gen	NPAssn	62	43	23	570	1,531
St. Elizabeth's Hospital	Gen	Church	280	255	55	2,753	10,538
Sibley Memorial Hospital	Gen	USPHS	454	422	2	2	2,201
Tuberculosis Sanatorium (Glenn Dale Sanatorium, Glenn Dale, Md., P. O.)	TB	City	686	616	..	...	640
U. S. Soldiers Home Hospital	Inst	Gen	466	242	..	...	1,105
Veterans Admin. Facility	Gen	Vet	327	248	..	...	3,795
Walter Reed General Hospital	Gen	Army	1,400	1,055	21	170	8,467
Washington Sanatorium and Hospital	Gen	Church	188	179	28	820	3,878

Related Institutions

Washington, 796,000							
District Training School (Laurel, Md., P. O.)	MeDe	City	672	639	6	2	94
Florence Crittenton Home	Mat	NPAssn	50	48	46	105	128
Home for the Aged and Infirm	Inst	City	145	137	..	...	124
Kendall House Sanatorium	Conv	Indiv	22	12	..	...	50
National Training School for Boys Hospital	Inst	Fed	30	12	..	...	1,009
Washington Home for Incurables	Incur	NPAssn	180	180	..	...	37

FLORIDA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Bartow, 6,158—Polk							
Bartow General Hospital	Gen	City	22	8	5	90	720
Polk County Hospital	Gen	County	63	48	5	23	947
Bay Pines, —Pinellas							
Veterans Admin. Facility	Gen	Vet	444	388	..	...	3,498
Bradenton, 7,441—Manatee							
Bradenton General Hospital	Gen	Part	18	8	6	56	399
Century, 2,000—Escambia							
Turberville Hospital	Gen	NPAssn	35	15	4	79	715
Chattahoochee, 7,110—Gadsden							
Florida State Hospital	Ment	State	5,389	5,177	5	24	2,773
Clearwater, 10,136—Pinellas							
Morton F. Plant Hospital	Gen	NPAssn	75	32	15	183	1,337
Cocon, 3,008—Brevard							
U. S. Naval Air Station							
Dispensary	Gen	Navy	96	20	4	31	731
Coral Gables, 8,294—Dade							
University Hospital	Gen	Corp	35	27	16	254	1,480
Dade City, 2,561—Pasco							
Jackson Memorial Hospital	Gen	County	20	6	4	49	306
Daytona Beach, 22,584—Volusia							
Hallfax District Hospital	Gen	NPAssn	65	30	12	136	1,077
U. S. Naval Air Station							
Dispensary	Gen	Navy	79	21	..	...	759
De Funiak Springs, 2,570—Walton							
Lakeside Clinic	Gen	Indiv	10	5	7	238	362
De Land, 7,041—Volusia							
De Land Memorial Hospital	Gen	NPAssn	22	8	8	85	457
U. S. Naval Air Station							
Dispensary	Gen	Navy	79	6	..	...	2,233
Dunedin, 1,758—Pinellas							
Mease Hospital	Gen	NPAssn	26	10	4	46	402
Eustis, 2,930—Lake							
Lake County Medical Center	Gen	NPAssn	57	22	10	119	833
Fort Barrancas, 750—Escambia							
Station Hospital	Gen	Army	90	64	..	...	1,752
Fort Lauderdale, 17,990—Broward							
Broward General Hospital	City	Gen	105	40	15	311	2,234
U. S. Naval Air Station							
Dispensary	Gen	Navy	67	14	..	...	724
Fort Myers, 10,604—Lee							
Jones							
Lee	Unit of Lee Memorial Hospital	Gen	37	16	9	253	1,269
Fort F							
Fort Pierce Memorial Hosp.	Gen	NPAssn	50	25	7	210	1,039
Gainesville, 13,757—Alachua							
Alachua County Hospital	Gen	County	116	50	25	502	2,121
University of Florida							
Infirmary	Inst	State	45	9	..	...	965
Hollywood, 6,239—Broward							
Hollywood Hospital	Gen	Corp	30	16	7	153	733
Jacksonville, 173,065—Duval							
Brewster Hospital	Gen	Church	80	51	15	781	2,163
Duval County Hospital	Gen	County	225	162	15	347	2,937
Hazelhurst Sanatorium	TB	NPAssn	30	20	..	...	30
Hope Haven Hospital	Orth	NPAssn	74	46	..	...	244
Negro Tuberculosis Hospital	TB	CyCo	50	45	..	...	98
Dr. Randolph's Sanitarium	N&M	Indiv	8	3	..	...	14
Riverside Hospital	Gen	NPAssn	50	43	10	161	1,761
St. Luke's Hospital	Gen	NPAssn	190	154	34	1,660	7,763
St. Vincent's Hospital	Gen	Church	238	192	62	2,214	8,240
U. S. Naval Air Station							
Dispensary	Gen	Navy	240	86	..	...	7,351
U. S. Naval Hospital	Gen	Navy	1,200	636	..	...	8,809
Key West, 12,927—Monroe							
U. S. Naval Hospital	Gen	Navy	386	306	12	176	3,868
Kissimmee, 3,225—Osceola							
Osceola Hospital	Gen	Indiv	40	20	6	78	1,007
Lake City, 5,836—Columbia							
Lake Shore Hospital	Gen	City	44	33	12	286	1,323
U. S. Naval Air Station							
Dispensary	Gen	Navy	69	..	..	...	Estab. 1943
..	Gen	Vet	405	180	..	...	1,807
L.							
..	Gen	City	84	55	12	400	2,296
Lake Wales, 5,024—Polk							
Lake Wales Hospital	Gen	NPAssn	28	6	7	77	268
Leesburg, 4,687—Lake							
Theresa Holland Hospital	Gen	Indiv	40	14	6	82	624
Manatee, 3,595—Manatee							
Riverside Hospital	Gen	Indiv	20	7	3	31	415
Marianna, 5,079—Jackson							
Jackson Hospital	Gen	NPAssn	34	28	10	191	1,260
Melbourne, 2,622—Brevard							
Brevard Hospital	Gen	City	29	8	5	109	360
U. S. Naval Air Station							
Dispensary	Gen	Navy	78	9	..	...	524
Miami, 172,172—Dade							
Christian Hospital	Gen	NPAssn	40	10	12	158	546
Dade County Hospital	Gen	TbCounty	181	93	20	291	2,551
James M. Jackson Memorial Hospital	Gen	City	500	391	55	2,083	14,329
Miami Medical Center	Gen	Indiv	35	10	..	...	100
Miami Retreat	N&M	NPAssn	85	20	..	...	462
Miami Riverside Hospital	Gen	Corp	44	29	10	220	1,012
National Children's Cardiac Home	Card	NPAssn	24	20	..	...	10
Sun-Ray Park Health Resort	Conv	Corp	75	25	..	...	335
U. S. Naval Air Station							
Dispensary	Gen	Navy	120	..	..	...	...

GEORGIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Atlanta, 302,288—Fulton							
Dwelle's Infirmary	Gen	Indiv	15	8	2	38	288
Florence Crittenton Home..	Mat	NPAssn	25	15	25	106	196
Georgia Sanitarium	Gen	Indiv	5	2	2	11	56
Our Lady of Perpetual Help							
Free Cancer Home.....	Cancer	Church	78	35	..	...	140
Social Disease Hospital.....	Ven	City	36	16	..	...	1,712
Columbus, 53,280—Muscookee							
Muscookee County Tuberculosis Hospital	TB	County	48	30	..	...	97
Cordele, 7,920—Crisp							
Gillespie Hospital	Gen	Church	30	10	6	10	186
Gracewood, 500—Richmond							
Georgia Training School for Mental Defectives	MeDe	State	450	441	..	...	48
Lyons, 1,900—Toombs							
Aiken Hospital	Gen	Indiv	8	5	3	60	370
Summerville, 1,358—Chattooga							
Summerville-Trion Hospital..	Gen	Corp	20	5	5	162	1,904
IDAHO							
Hospitals and Sanatoriums							
American Falls, 1,430—Power							
Schiltz Memorial Hospital...	Gen	County	25	9	8	136	546
Blackfoot, 3,681—Bingham							
State Hospital South@.....	Ment	State	700	649	..	...	255
Boise, 26,130—Ada							
St. Alphonsus Hospital@.....	Gen	Church	150	97	30	564	4,118
St. Luke's Hospital@.....	Gen	Church	115	96	20	636	6,843
Veterans Admin. Facility@.....	Gen	Vet	203	116	..	...	807
Bonnars Ferry, 1,345—Boundary							
Bonnars Ferry Hospital.....	Gen	Corp	25	10	8	133	363
Burley, 5,329—Cassia							
Cottage Hospital	Gen	Corp	18	16	4	175	548
Caldwell, 7,272—Canyon							
Caldwell Sanitarium	Gen	Part	22	11	6	79	437
Coeur d'Alene, 10,049—Kootenai							
Coeur d'Alene Hospital.....	Gen	NPAssn	25	16	4	13	60
Lake City General Hospital..	Gen	Indiv	47	37	10	165	1,319
Cottonwood, 673—Idaho							
Our Lady of Consolation Hospital	Gen	Church	30	22	10	88	647
Council, 692—Adams							
Community Hospital	Gen	NPAssn	16	10	6	74	509
Farragut, —Kootenai							
U. S. Naval Hospital*.....	Gen	Navy	2,097	...	12	Estab.	1943
Fort Hall, 200—Bingham							
Fort Hall Indian Agency Hospital	Gen	IA	14	8	4	60	222
Gooding, 2,568—Gooding							
Gooding County Hospital...	Gen	NPAssn	16	10	7	151	465
Grangeville, 1,929—Idaho							
General Hospital	Gen	City	20	8	6	31	240
Hailey, 1,443—Blaine							
Hailey Clinical Hospital.....	Gen	Indiv	20	10	6	70	521
Idaho Falls, 15,024—Bonneville							
Idaho Falls Latter-Day Saints' Hospital@	Gen	Church	130	73	35	721	3,100
Sacred Heart Hospital@.....	Gen	Church	33	21	8	124	756
Kellogg, 4,235—Shoshone							
Wardner Hospital	Gen	Part	35	23	7	206	1,303
Ketchum, 1,300—Blaine							
U. S. Naval Convalescent Hospital@	Conv	Navy	1,200	...	..	Estab.	1943
Lapwai, 426—Nez Perce							
Fort Lapwai Sanatorium...	TB	IA	50	43	..	...	75
Lewiston, 10,548—Nez Perce							
St. Joseph's Hospital@.....	Gen	Church	115	59	20	385	1,949
White Hospital	Gen	Corp	30	10	4	49	338
Malad City, 2,731—Oneida							
Oneida Hospital	Gen	NPAssn	20	9	8	173	596
Moscow, 6,014—Latah							
Gritman Memorial Hospital.	Gen	NPAssn	27	20	12	244	928
University of Idaho Infirmary Inst		State	30	8	..	...	633
Nampa, 12,149—Canyon							
Mercy Hospital@	Gen	Church	100	44	20	410	1,804
Nazarene Missionary Sanitarium (Samaritan Hospital Division)@							
	Gen	Church	50	25	6	124	1,004
	Gen	Part	38	14	4	80	517
	Ment	State	430	426	..	...	121
	Gen	CyCo	81	53	22	429	2,172
	Gen	Church	100	48	25	530	2,278
Potlatch, 1,100—Latah							
Potlatch Hospital	Gen	Part	20	9	4	77	366
Preston, 4,236—Franklin							
	Gen	NPAssn	17	10	6	181	382
	Gen	Indiv	14	6	6	78	528
Rupert, 3,167—Minidoka							
Rupert General Hospital...	Gen	Indiv	15	6	3	68	310
St. Maries, 2,234—Benewah							
St. Maries Hospital.....	Gen	Part	25	9	3	38	332
Sandpoint, 4,356—Bonner							
Community Hospital	Gen	NPAssn	34	25	10	177	622
Soda Springs, 1,687—Caribou							
Caribou County Hospital...	Gen	County	36	21	7	62	1,411

IDAHO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Twin Falls, 11,851—Twin Falls Hospital	Gen	County	81	67	23	660	2,030
Wallace, 3,839—Shoshone	Gen	Church	50	36	12	207	1,106
Providence Hospital	Gen	Part	10	16	6	110	770
Wendell, 1,001—Gooding	Gen	Church	31	26	12	376	1,022
St. Valentine's Hospital	Gen	Church	31	26	12	376	1,022
Related Institutions							
Boise, 26,130—Ada							
Salvation Army Women's Home and Hospital	Mat	Church	30	13	17	125	151
Nampa, 12,140—Canyon	Gen	State	601	601	..	..	67
Priest River, 1,056—Bonner	Gen	Indiv	10	3	2	12	67

ILLINOIS

Hospitals and Sanatoriums

Alton, 31,255—Madison	Gen	Church	119	101	26	787	1,677
Alton Memorial Hospital	Gen	Church	1,701	1,675	..	..	581
Alton State Hospital	Ment	State	95	68	..	..	1,011
St. Anthony's Infirmary and Sanitarium	Gen	Church	141	109	30	739	1,747
St. Joseph's Hospital	Gen	Church	11	7	5	82	232
Amboy, 1,846—Lee	Gen	NPAasn	11	7	5	82	232
Amboy Public Hospital	Gen	NPAasn	11	7	5	82	232
Anna, 4,002—Union	Gen	NPAasn	11	7	5	82	232
Anna State Hospital	Ment	State	2,106	2,100	..	..	612
Hale-Willard Memorial Hosp.	Gen	City	12	7	1	211	418
Aurora, 47,170—Kane	Gen	NPAasn	135	107	20	609	3,810
Copley Hospital	Gen	NPAasn	135	107	20	609	3,810
Kane County Springbrook Sanitarium	TB	County	80	67	..	..	73
Mercyville Sanitarium	N&M	Church	150	150	..	..	338
St. Charles Hospital	Gen	Church	125	89	28	661	2,720
St. Joseph Mercy Hospital	Gen	Church	118	127	36	736	3,447
Avon, 803—Fulton	Gen	NPAasn	21	7	7	97	312
Saunders Hospital	Gen	NPAasn	21	7	7	97	312
Batavia, 5,101—Kane	Gen	NPAasn	75	48	..	..	91
Fox River Sanitarium	TB	NPAasn	75	48	..	..	91
Belleview, 23,405—St. Clair	Gen	Church	106	85	24	885	3,189
St. Elizabeth's Hospital	Gen	Church	106	85	24	885	3,189
Belvidere, 8,094—Boone	Gen	NPAasn	32	21	10	166	898
Highland Hospital	Gen	NPAasn	32	21	10	166	898
St. Joseph's Hospital	Gen	Church	35	23	9	172	844
Clinton, 7,372—Franklin	Gen	Indiv	25	11	2	10	338
Moore Hospital	Gen	Indiv	25	11	2	10	338
Jerwyn, 48,451—Cook	Gen	NPAasn	150	106	60	1,520	5,385
MacNeal Memorial Hospital	Gen	NPAasn	150	106	60	1,520	5,385
Bloomington, 32,868—McLean	Gen	Church	101	77	27	559	2,676
Menonite Hospital	Gen	Church	190	143	35	520	3,465
St. Joseph's Hospital	Gen	Church	190	143	35	520	3,465
Blue Island, 16,628—Cook	Gen	Church	85	62	15	654	3,431
St. Francis Hospital	Gen	Church	85	62	15	654	3,431
Bree, 2,266—Clinton	Gen	Church	40	29	10	253	914
St. Joseph Hospital	Gen	Church	40	29	10	253	914
Bushnell, 2,906—McDonough	Gen	Church	40	29	10	253	914
"Elmgrove" McDonough County Tuberculosis Sanatorium	TB	County	32	22	..	..	46
Calro, 14,407—Alexander	Gen	Church	60	38	..	..	83
Alexander County Tuberculosis Sanatorium	TB	County	60	38	..	..	83
St. Mary's Infirmary	Gen	Church	100	48	12	408	2,480
Canton, 11,577—Fulton	Gen	NPAasn	100	61	25	628	2,088
Graham Hospital	Gen	NPAasn	100	61	25	628	2,088
Carbondale, 8,550—Jackson	Gen	Church	75	31	12	375	3,000
Holden Hospital	Gen	Church	75	31	12	375	3,000
Carlinville, 4,965—Macoupin	Gen	Indiv	26	19	6	169	808
Macoupin Hospital	Gen	Indiv	26	19	6	169	808
Carrollton, 2,285—Greene	Gen	NPAasn	18	10	5	87	455
Boyd Memorial Hospital	Gen	NPAasn	18	10	5	87	455
Centuria, 16,343—Marion	Gen	Church	75	50	15	529	1,985
St. Mary's Hospital	Gen	Church	75	50	15	529	1,985
Champaign, 23,302—Champaign	Gen	City	115	80	25	614	3,746
Burnham City Hospital	Gen	City	115	80	25	614	3,746
Charleston, 8,107—Coles	Gen	NPAasn	31	14	9	186	512
M. A. Montgomery Memorial Sanitarium	Gen	NPAasn	31	14	9	186	512
Chicago, 3,396,803—Cook	Gen	Unit of University of Chicago Clinics	272	224	..	..	5,540
Albert Merritt Billings Hosp.	Gen	Church	272	224	..	..	5,540
Alexian Brothers Hospital	Gen	NPAasn	175	112	25	552	4,585
American Hospital	Gen	Church	275	250	30	995	7,590
Augustana Hospital	Gen	NPAasn	100	73	25	819	3,778
Belmont Community Hosp.	Gen	Church	25	16	..	..	600
Bethany Home Hospital	Gen	Church	55	38	23	607	2,008
Bethany Sanitarium and Hospital	Gen	Church	55	38	23	607	2,008
Boys Roberts Memorial Hospital for Children	Gen	Unit of University of Chicago Clinics	40	11	0	91	535
Burrows Hospital	Gen	Indiv	40	11	0	91	535
Chicago Eye, Ear, Nose and Throat Hospital	ENT	Corp	75	10	..	..	613
Chicago Fresh Air Hospital	TB	NPAasn	40	21	..	..	179
Chicago Intensive Treatment Center	Gen	City	200	113	..	..	3,730

ILLINOIS—Continued

Hospitals and Sanatoriums

Chicago Lying-In Hospital of the Univ. of Chicago	Gen	Unit of University of Chicago Clinics	88	65	20	400	2,731
Chicago Memorial Hosp.	Gen	NPAasn	88	65	20	400	2,731
Chicago State Hospital	Ment	State	4,487	4,721	..	..	1,011
Children's Memorial Hosp.	Chil	NPAasn	248	120	..	..	3,591
City of Chicago Municipal Tuberculosis Sanitarium	TB	City	1,219	1,188	1	20	1,345
Columbus Hospital	Gen	Church	152	80	18	341	3,214
Cook County Children's Hosp.	Unit of Cook County Hospital						
Cook County Hospital	Gen	County	3,200	2,594	225	5,006	64,357
Cook County Psychopathic Hospital	Gen	Unit of Cook County Hospital					
Edgewater Hospital	Gen	NPAasn	135	115	33	861	5,452
Englewood Hospital	Gen	NPAasn	157	126	30	924	5,412
Evangelical Hospital	Gen	Church	185	185	60	2,205	7,456
Fairview Sanitarium	N&M	Corp	40	35	..	..	200
Frank Cuneo Hospital	Mat	Church	100	24	50	920	930
Franklin Boulevard Hosp.	Gen	Corp	53	40	16	442	2,119
Garfield Park Community Hospital	Gen	NPAasn	150	134	32	1,225	4,682
Grant Hospital	Gen	NPAasn	242	192	45	1,459	7,680
Henrotin Hospital	Gen	NPAasn	100	79	22	539	3,047
Holy Cross Hospital	Gen	Church	130	110	36	1,229	4,287
Home for Destitute Crippled Children	Gen	Unit of University of Chicago Clinics					
Hospital of St. Anthony de Padua	Gen	Church	220	189	49	1,531	6,700
Illinois Central Hospital	Gen	NPAasn	250	195	40	1,021	5,378
Illinois Eye and Ear Infirmary	ENT	State	145	130	..	..	3,068
Illinois Masonic Hospital	Gen	NPAasn	159	121	30	802	5,048
Illinois Neuropsychiatric Institute	Ment	State	94	70	..	..	225
Illinois Surgical Institute for Children	Gen	Unit of Research and Educational Hospitals					
Jackson Park Hospital	Gen	Corp	175	88	40	651	4,179
Kenner Hospital	Gen	NPAasn	40	17	6	71	589
La Rabida Jackson Park Sanitarium	CardChil	NPAasn	100	59	..	..	63
Lewis Memorial Maternity Hospital	Mat	Church	106	55	100	1,849	2,191
Loretto Hospital	Gen	Church	125	98	34	863	3,873
Lutheran Deaconess Home and Hospital	Gen	Church	176	167	42	1,153	5,750
Martha Washington Hospital	Gen	NPAasn	85	56	20	449	2,726
Mercy Hospital-Loyola University Clinics	Gen	Church	320	245	40	803	7,701
Michael Reese Hospital	Gen	NPAasn	625	474	80	2,037	16,875
Misericordia Hospital and Home for Infants	Mat	Church	58	7	19	253	258
Mother Cabrini Memorial Hospital	Gen	Church	140	79	24	822	3,507
Mount Sinai Hospital	Gen	NPAasn	235	191	45	1,165	7,576
Municipal Contagious Disease Hospital	Iso	City	428	76	..	..	2,033
North Chicago Hospital	Gen	NPAasn	55	30	15	300	2,100
Norwegian-American Hospital	Gen	NPAasn	182	144	50	1,438	5,951
Orthopaedic Institute	See Illinois Surgical Institute for Children						
Parkway Sanitarium	N&M	Corp	50	47	..	..	459
Passavant Memorial Hospital	Gen	NPAasn	220	185	35	772	7,624
Pine Sanitarium	N&M	NPAasn	40	29	..	..	320
Presbyterian Hospital	Gen	Church	415	343	34	1,314	11,068
Provident Hospital	Gen	NPAasn	147	125	20	906	4,124
Ravenswood Hospital	Gen	NPAasn	163	137	45	1,351	5,812
Research and Educational Hospitals	Gen	State	514	374	34	759	5,893
Roseland Community Hospital	Gen	NPAasn	101	79	24	795	3,635
St. Anne's Hospital	Gen	Church	280	272	60	2,185	8,029
St. Anthony de Padua Hosp.	See Hospital of St. Anthony de Padua						
St. Bernard's Hospital	Gen	Church	200	139	42	1,288	7,124
St. Elizabeth Hospital	Gen	Church	327	213	77	2,158	8,244
St. George Hospital	Gen	Church	100	54	..	..	2,282
St. Joseph Hospital	Gen	Church	260	167	40	1,160	5,337
St. Luke's Hospital	Gen	NPAasn	485	413	55	1,355	15,192
St. Mary of Nazareth Hospital	Gen	Church	264	225	60	2,135	9,788
St. Vincent's Infant and Maternity Hospital	MatCh	Church	290	197	20	398	1,009
Sarah Morris Hospital for Children	Unit of Michael Reese Hospital						
Shriners Hospital for Crippled Children	Orth	NPAasn	60	44	..	..	222
South Chicago Community Hospital	Gen	NPAasn	135	93	40	940	6,235
South Shore Hospital	Gen	Corp	100	75	25	876	3,275
Southtown Hospital	Gen	NPAasn	70	60	17	534	2,201
Swedish Covenant Hosp.	Gen	Church	193	161	65	1,817	6,177
U. S. Marine Hospital	USPHS	Gen	301	198	..	..	2,750
University Hospital	Gen	NPAasn	100	78	21	264	4,380
University of Chicago Clinics	Gen	NPAasn	526	431	134	3,710	12,142
Walther Memorial Hosp.	Gen	Church	175	125	34	820	5,665
Wesley Memorial Hosp.	Gen	Church	446	327	51	1,184	11,423
Women and Children's Hospital	Gen	NPAasn	125	99	30	1,016	4,220

Key to symbols and abbreviations is on page 855

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Woodlawn Hospital*AA.....	Gen	NPAasn	125	96	26	551	3,996
Chicago Heights, 22,461—Cook							
St. James Hospital*AA.....	Gen	Church	100	74	20	734	6,405
Clinton, 6,331—De Witt							
John Warner Hospital.....	Gen	City	36	21	5	154	974
Danville, 36,919—Vermilion							
Lake View Hospital*AA.....	Gen	NPAasn	145	104	25	559	3,366
St. Elizabeth Hospital*AA.....	Gen	Church	180	137	34	795	5,269
Vermilion County Tubercu- losis Dispensary and Hosp.*TB	County		60	50	..	..	48
Veterans Admin. Facility*AA.....	Ment	Vet	2,022	1,844	..	..	635
Decatur, 59,305—Macon							
Decatur and Macon County Hospital*AA.....	Gen	NPAasn	145	126	30	886	4,196
Macon County Tuberculosis Sanatorium*.....	TB	County	80	70	..	..	87
St. Mary's Hospital*AA.....	Gen	Church	210	201	25	1,055	6,547
Wabash Employes' Hosp.*AA.....	Indus	NPAasn	75	43	..	..	1,167
De Kalb, 9,146—De Kalb							
De Kalb County Tuberculosis Sanatorium.....	TB	County	33	13	..	..	17
De Kalb Public Hospital*AA.....	Gen	City	40	29	9	250	976
St. Mary's Hospital*AA.....	Gen	Church	45	35	9	124	1,386
Des Plaines, 9,518—Cook							
Forest Sanitarium.....	N&M	Indiv	26	16	..	..	88
Dixon, 10,671—Lee							
Dixon Public Hospital*AA.....	Gen	NPAasn	105	58	22	468	2,181
Downey, —Lake							
Veterans Admin. Facility*AA.....	Ment	Vet	1,625	1,510	..	..	555
Dunning, —Cook							
Chicago State Hospital.....	See Chicago						
Du Quoin, 7,515—Perry							
Marshall Browning Hospital..	Gen	NPAasn	48	25	9	275	843
Dwight, 2,499—Livingston							
Veterans Admin. Facility*AA.....	Gen	Vet	212	111	..	..	849
East Moline, 12,359—Rock Island							
East Moline State Hospital.....	Ment	State	2,102	1,942	..	..	680
East St. Louis, 75,600—St. Clair							
Christian Welfare Hospital*AA.....	Gen	NPAasn	152	103	33	1,009	5,260
Pleasant View Sanatorium*.....	TB	County	98	92	..	..	85
St. Mary's Hospital*AA.....	Gen	Church	260	178	36	882	5,447
Edwardsville, 8,005—Madison							
Madison County Sanatorium*TB	County		99	76	..	..	43
Effingham, 6,180—Effingham							
St. Anthony's Hospital.....	Gen	Church	80	72	12	381	2,301
Eldorado, 4,891—Saline							
Ferrell Hospital.....	Gen	Part	22	8	6	107	306
Elgin, 35,233—Kane							
Elgin State Hospital*.....	Ment	State	4,046	4,977	..	..	1,495
Resthaven Sanitarium.....	N&M	Indiv	85	75	..	..	125
St. Joseph Hospital*AA.....	Gen	Church	120	89	20	506	3,067
Sherman Hospital*AA.....	Gen	NPAasn	125	118	30	674	4,711
Elmhurst, 15,458—Du Page							
Elmhurst Community Hospital*AA.....	Gen	NPAasn	110	91	35	747	3,755
Evanston, 65,389—Cook							
Community Hospital.....	Gen	NPAasn	28	12	7	46	460
Evanston Hospital*AA.....	Gen	NPAasn	250	187	40	1,246	7,843
St. Francis Hospital*AA.....	Gen	Church	300	220	68	1,593	8,416
Evergreen Park, 3,313—Cook							
Little Company of Mary Hospital*AA.....	Gen	Church	200	169	81	2,439	8,036
Fairbury, 2,300—Livingston							
Fairbury Hospital.....	Gen	NPAasn	29	14	12	233	622
Fort Sheridan, —Lake							
Station Hospital*AA.....	Gen	Army	160	149	6	27	3,260
Freeport, 22,306—Stephenson							
Deaconess Hospital*AA.....	Gen	NPAasn	87	60	25	410	1,223
St. Francis Hospital*AA.....	Gen	Church	103	70	20	457	2,808
Galesburg, 28,876—Knox							
Galesburg Cottage Hosp.*AA.....	Gen	NPAasn	96	70	26	563	2,383
St. Mary's Hospital.....	Gen	Church	100	95	17	378	2,368
Geneseo, 3,824—Henry							
J. C. Hammond City Hosp.*AA.....	Gen	City	27	18	10	223	1,021
Geneva, 4,101—Kane							
Community Hospital*AA.....	Gen	NPAasn	67	42	20	251	1,448
Glenview, 2,500—Cook							
U. S. Naval Air Station Dispensary.....	Gen	Navy	120	..	..	..	..
Granville, —Lake							
St. ..	Gen	Church	102	93	24	937	3,553
Great Lakes, —Lake							
U. S. Naval Hospital*AA.....	Gen	Navy	3,600	2,613	..	..	38,275
Harrisburg, 11,453—Saline							
Harrisburg Hospital.....	Gen	Corp	30	10	5	27	388
Lightner Hospital.....	Gen	Indiv	35	15	10	217	1,192
Harvard, 3,121—McHenry							
Harvard Community Hosp..	Gen	Part	21	13	8	145	391
Harvey, 17,878—Cook							
Ingalls Memorial Hospital*AA.....	Gen	NPAasn	95	67	25	926	3,467
Herrin, 9,352—Williamson							
Herrin Hospital.....	Gen	Indiv	80	52	20	370	1,704
Highland, 3,820—Madison							
St. Joseph's Hospital.....	Gen	Church	79	54	11	364	1,756
Highland Park, 14,476—Lake							
Highland Park Hospital*AA.....	Gen	NPAasn	51	32	17	400	1,506
Hillsboro, 4,514—Montgomery							
Hillsboro Hospital.....	Gen	NPAasn	41	28	10	200	643

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hines, —Cook							
Veterans Admin. Facility*AA.....	GenTb	Vet	1,750	1,534	..	..	10,194
Hinsdale, 7,336—Du Page							
Hinsdale Sanitarium and Hospital*AA.....	Gen	Church	100	66	14	381	2,001
Jacksonville, 19,844—Morgan							
Jacksonville State Hospital.....	Ment	State	3,462	3,128	..	..	780
Morgan County Tuberculosis Sanatorium "Onklawn".....	TB	County	35	30	..	..	44
Norbury Sanatorium*AA.....	N&M	Corp	125	81	..	..	163
Our Saviour's Hospital*AA.....	Gen	Church	92	45	12	138	1,073
Passavant Memorial Hosp.*AA.....	Gen	Church	73	58	12	329	1,744
Joliet, 42,365—Will							
Illinois State Penitentiary Hospital.....	Inst	State	153	46	..	..	1,713
St. Joseph's Hospital*AA.....	Gen	Church	290	235	44	1,594	7,354
Silver Cross Hospital*AA.....	Gen	NPAasn	168	89	30	877	3,755
Will County Tuberculosis Sanatorium.....	TB	County	100	75	..	..	85
Kankakee, 22,241—Kankakee							
Kankakee State Hospital.....	Ment	State	4,200	3,749	..	..	740
St. Mary's Hospital*AA.....	Gen	Church	160	106	35	1,042	3,965
Kenilworth, 2,935—Cook							
Kenilworth Sanitarium.....	N&M	Indiv	50	36	..	..	226
Kewanee, 16,901—Henry							
Kewanee Public Hospital*AA.....	Gen	NPAasn	56	36	10	247	1,119
St. Francis Hospital*AA.....	Gen	Church	100	70	18	305	1,490
Lake Forest, 6,885—Lake							
Lake Forest Hospital*AA.....	Gen	NPAasn	37	27	10	138	875
La Salle, 12,812—La Salle							
St. Mary's Hospital*AA.....	Gen	Church	90	69	15	384	2,138
Libertyville, 3,930—Lake							
Condell Memorial Hospital..	Gen	NPAasn	25	13	9	110	542
Lincoln, 12,752—Logan							
Evangelical Deaconess Hosp.*AA.....	Gen	Church	65	43	15	338	1,819
St. Clara's Hospital.....	Gen	Church	60	38	6	131	1,181
Litchfield, 7,948—Montgomery							
St. Francis Hospital.....	Gen	Church	158	135	17	410	3,500
Mackinaw, 845—Tazewell							
Oak Knoll Sanatorium.....	TB	County	45	39	..	..	50
Macomb, 8,764—McDonough							
Phelps Hospital.....	Gen	NPAasn	45	30	10	154	1,094
St. Francis Hospital*AA.....	Gen	Church	100	72	15	337	2,666
Manteno, 1,537—Kankakee							
Manteno State Hospital*AA.....	Ment	State	7,235	6,409	..	..	2,770
Marion, 9,251—Williamson							
Veterans Admin. Facility*AA.....	Gen	Vet	160	118	..	..	1,188
Mattoon, 15,827—Coles							
Memorial Methodist Hospital.....	Gen	Church	50	38	10	308	1,302
Melrose Park, 10,933—Cook							
Westlake Hospital*AA.....	Gen	NPAasn	65	53	25	798	2,352
Mendota, 4,215—La Salle							
Harris Hospital.....	Gen	Indiv	23	10	8	180	643
Metropolis, 6,287—Massac							
Fisher Hospital.....	Gen	Indiv	16	11	5	134	514
Moline, 34,608—Rock Island							
Lutheran Hospital*AA.....	Gen	Church	135	98	25	777	3,947
Moline Public Hospital*AA.....	Gen	City	204	172	54	1,826	5,636
Monmouth, 9,096—Warren							
Monmouth Hospital*AA.....	Gen	City	72	52	18	292	1,229
Monticello, 2,523—Piatt							
John and Mary E. Kirby Hospital.....	Gen	NPAasn	25	19	6	104	420
Morris, 6,145—Grundy							
Morris Hospital.....	Gen	NPAasn	40	29	16	338	1,126
Moweaqua, 1,306—Shelby							
Moweaqua Hospital.....	Gen	Indiv	26	18	8	81	196
Murphysboro, 9,976—Jackson							
St. Andrew's Hospital*AA.....	Gen	Church	36	21	12	228	964
Naperville, 5,272—Du Page							
Edward Sanatorium*AA.....	TB	NPAasn	102	95	..	..	203
Normal, 6,983—McLean							
Brokaw Hospital*AA.....	Gen	Church	90	64	15	179	2,032
Fairview Sanatorium.....	TB	County	57	44	..	..	24
North Riverside (Riverside P.O.)—Cook							
Municipal Tuberculosis San- itarium—North Riverside Division.....	TB	City	256	170	..	..	240
Oak Forest, 825—Cook							
Cook County Infirmary.....	Chr	County	1,250	1,225	..	..	3,094
Cook County Tuberculosis Hospital.....	TB	County	585	344	13	..	318
Oak Park, 66,015—Cook							
Oak Park Hospital*AA.....	Gen	Church	133	92	44	930	4,296
West Suburban Hospital*AA.....	Gen	NPAasn	312	258	100	2,492	10,666
Olney, 7,831—Richland							
Olney Sanitarium*AA.....	Gen	Corp	85	61	11	248	2,136
Oregon, 2,825—Ogle							
Warmolts Clinic.....	Gen	Indiv	25	17	8	164	398
Ottawa, 16,005—La Salle							
Highland.....	TB	County	74	52	..	..	42
Ottawa Tuberculosis Sanato- rium*AA.....	TB	Corp	133	131	..	..	147
Ryburn Memorial Hospital*AA.....	Gen	City	88	70	24	671	2,926
Pana, 5,966—Christian							
Huber Memorial Hospital*AA.....	Gen	Church	37	29	6	155	875
Paris, 9,281—Edgar							
Paris Hospital*AA.....	Gen	NPAasn	75	70	10	340	2,400
Paxton, 3,106—Ford							
Paxton Community Hospital.....	Gen	NPAasn	18	9	5	118	326

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Pekin, 19,407—Tazewell							
Pekin Public Hospital.....	Gen	NPAasn	98	61	21	337	2,640
Peoria, 105,087—Peoria							
Costeff Sanatorium.....	N&M	Indiv	10	8	..	..	62
John C. Proctor Hospital.....	Gen	NPAasn	110	71	16	436	2,724
Methodist Hospital of Central Illinois**+A...	Gen	Church	200	136	40	1,018	5,701
Michell Farm Sanatorium....	N&M	Indiv	32	17	..	..	85
Michell Sanatorium.....	N&M	Indiv	25	10	..	..	87
Peoria Municipal Tuberculosis Sanatorium+...	TB	City	103	85	..	..	221
Peoria State Hospital+...	Ment	State	2,708	2,490	..	..	765
St. Francis Hospital**+A...	Gen	Church	500	343	9	2,103	14,093
Perry, 8,983—La Salle							
Peoples Hospital.....	Gen	NPAasn	50	33	10	103	900
Pittsfield, 2,681—Pike							
Illini Community Hospital+...	Gen	NPAasn	30	23	10	207	1,140
Pontiac, 9,585—Livingston							
Livingston County Sanat....	TB	County	50	40	..	..	39
St. James Hospital.....	Gen	Church	50	30	17	293	862
Princeton, 5,224—Bureau							
Julia Rackley Perry Memorial Hospital.....	Gen	City	53	43	11	313	1,456
Quincy, 40,460—Adams							
Blessing Hospital+...	Gen	NPAasn	100	84	20	530	2,771
Hillcrest.....	TB	County	50	38	..	..	35
St. Mary's Hospital+...	Gen	Church	150	135	25	670	4,532
Rantoul, 2,367—Champaign							
Station Hospital+...	Gen	Army	150	114	4	10	4,071
Red Bud, 1,302—Randolph							
St. Clement's Hospital.....	Gen	Church	20	10	7	132	332
Robinson, 4,311—Crawford							
Brooks Hospital.....	Gen	Part	20	10	5	121	418
Robinson Hospital.....	Gen	Part	19	4	4	31	130
Rochelle, 4,200—Ogle							
Rochelle Hospital.....	Gen	City	25	..	12	Estab. 1943	..
Rockford,							
Elmhurst.....	N&M	Indiv	30	17	..	..	102
Rockford.....	Gen	NPAasn	90	76	20	511	2,709
Rockford Municipal Tuberculosis Sanatorium+...	TB	CityCo	124	107	..	..	155
St. Anthony's Hospital+...	Gen	Church	240	195	60	1,566	8,365
Swedish-American Hospital+...	Gen	NPAasn	125	103	30	818	4,794
Winnebago County Hospital, Gen+...	Gen+...	County	76	43	6	14	616
Rock Island, 42,775—Rock Island							
Rock Island County Tuberculosis Sanatorium.....	TB	County	76	53	..	..	49
St. Anthony's Hospital+...	Gen	Church	150	103	30	527	3,357
Rosclaire, 1,774—Hardin							
Rosclaire Hospital.....	Gen	Indiv	16	4	4	33	210
hville, 2,480—Schuyler							
bertson Hospital.....	Gen	Indiv	25	10	5	33	333
Charles, 5,870—Kane							
Minor Hospital+...	Gen	NPAasn	30	18	10	176	829
lem, 7,319—Marion							
Salem Memorial Hospital....	Gen	NPAasn	55	25	8	271	1,270
Savanna, 4,702—Carroll							
Savanna City Hospital.....	Gen	City	36	13	12	259	622
Shelbyville, 4,092—Shelby							
Shelby County Memorial Hospital.....	Gen	NPAasn	21	19	7	122	475
Sparta, 3,694—Randolph							
Sparta Community Hospital.....	Gen	Indiv	11	6	3	74	207
Springfield, 75,503—Sangamon							
Memorial Hospital+...	Gen	NPAasn	235	100	50	541	3,120
Palmer Sanatorium+...	TB	Corp	83	80	..	..	99
St. John's Crippled Children's Home.....	Unit of	St. John's Sanitarium					
St. John's Hospital+...	Gen	Church	630	513	70	1,605	15,457
St. John's Sanitarium and Orthopedic Hospital.....	TbOr	Church	260	175	..	..	340
Spring Valley, 5,010—Bureau							
St. Margaret's Hospital.....	Gen	Church	78	73	12	349	2,333
Sterling, 11,363—Whiteside							
Home Hospital.....	Gen	NPAasn	25	12	6	10	417
Public Hospital+...	Gen	City	57	45	14	438	1,898
Streator, 11,930—La Salle							
St. Mary's Hospital.....	Gen	Church	128	99	14	703	4,339
Sycamore, 4,702—De Kalb							
Sycamore Municipal Hosp.+...	Gen	City	27	17	15	105	618
Taylorville, 8,313—Christian							
St. Vincent Hospital.....	Gen	Church	85	68	20	395	2,505
Tuscola, 2,838—Douglas							
Douglas County Jarman Memorial Hospital.....	Gen	County	40	27	12	232	1,200
Urbana, 14,064—Champaign							
Carle Memorial Hospital+...	Gen	Corp	50	43	12	218	1,588
Champaign County Hospital Gen	Gen	County	60	20	8	98	749
Mersey Hospital+...	Gen	Church	102	81	19	663	3,448
The Outlook.....	TB	County	44	40	..	..	39
Vandalia, 5,288—Fayette							
Mark Greer Hospital.....	Gen	Indiv	30	23	10	216	1,097
Watseka, 3,744—Iroquois							
Iroquois Hospital.....	Gen	NPAasn	41	24	15	376	1,190
Waukegan, 34,241—Lake							
Lake County General Hosp..	Gen	County	75	50	..	..	704
Lake County Tuberculosis Sanatorium+...	TB	County	100	85	..	..	209
St. Therese's Hospital+...	Gen	Church	200	125	38	904	5,128
Victory Memorial Hospital+...	Gen	NPAasn	110	80	25	865	3,622
White Hall, 3,025—Greene							
White Hall Hospital.....	Gen	NPAasn	10	8	5	80	350

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Winfield, 567—Du Page							
Winfield Sanatorium+...	TB	NPAasn	92	70	..	..	107
Zace Sanatorium.....	TB	NPAasn	50	32	..	..	53
Winnetka, 12,430—Cook							
North Shore Health Resort..	N&M	Corp	75	51	..	..	230
Woodstock, 6,123—McHenry							
Woodstock Public Hospital..	Gen	NPAasn	26	26	18	355	1,133
Zeligler, 3,006—Franklin							
Zeligler Hospital.....	Indus	NPAasn	10	1	..	..	100
Related Institutions							
Arlington Heights, 5,668—Cook							
Magnus Farm.....	Conv	Indiv	15	12	..	..	22
Batavia, 5,101—Kane							
Bellevue Place Sanitarium...	N&M	Corp	35	..	..	..	..
Belleville, 28,405—St. Clair							
St. Clair County Hospital and Home.....	InstGen	County	100	75	2	18	325
Chicago, 3,396,808—Cook							
Beverly Hills Rest Home....	Conv	Indiv	10	7	..	..	24
Chicago Home for Convalescent Women and Children..	Conv	NPAasn	40	20	..	..	75
Chicago Home for Incurables Incur	Conv	NPAasn	272	266	..	..	80
House of Correction Hosp..	Inst	City	75	20	..	..	940
Long's Convalescent Home..	N&M	Indiv	24	20	..	..	85
Martha Washington Home for Dependent Crippled Children.....	Orth	NPAasn	30	21	..	..	30
Parkway Lodge Convalescent Home for Men and Women	Conv	City	151	116	..	..	317
Reynolds Rest Home.....	Conv	Indiv	35	25	..	..	50
Rosary Hill Convalescent Home.....	Conv	Church	40	32	..	..	164
Salvation Army Booth Memorial Hospital.....	Mat	Church	21	13	12	219	254
Sheridan Mansion.....	Conv	Indiv	18	16	..	..	80
Washington and Jane Smith Home.....	InstGen	NPAasn	22	17	..	..	297
Decatur, 50,305—Macon							
City Public Hospital.....	Iso	City	40	5	..	..	154
Des Plaines, 9,518—Cook							
Northwestern Hospital.....	Gen	NPAasn	14	6	6	92	460
Dixon, 10,671—Lee							
Dixon State Hospital.....	MeDe	State	4,786	4,285	11	11	654
Evanston, 65,389—Cook							
Broadhurst Nursing Home..	Conv	Part	25	22	..	..	83
The Cradle.....	Chil	NPAasn	36	38	..	..	180
Virginia Hall Nursing Home..	Conv	Part	31	28	..	..	62
Geneva, 4,101—Kane							
State Training School for Girls.....	Inst	State	22	15	15	..	298
Godfrey, 300—Madison							
Beverly Farm.....	MeDe	Corp	90	85	..	..	18
Lincoln, 12,752—Logan							
Lincoln State School and Colony.....	MeDe	State	4,785	4,360	1	3	376
Mattoon, 15,827—Coles							
Independent Order Odd Fellows Old Folks Home Hosp.	Inst	NPAasn	55	30	..	..	160
Menard, 22—Randolph							
Illinois Security Hospital....	Ment	State	500	435	..	..	39
Minonk, 1,897—Woodford							
Woodford County Tuberculosis Sanatorium.....	TB	County	14	8	..	..	3
Mooseheart, 995—Kane							
Philadelphia Memorial Hospital.....	InstChil	NPAasn	65	33	..	..	1,200
Normal, 6,983—McLean							
Illinois Soldiers' and Sailors' Children's School Hospital.	Inst	State	120	25	..	..	945
Park Ridge, 12,063—Cook							
Park Ridge Convalescent Home.....	Conv	Part	17	16	..	..	43
Peoria, 105,087—Peoria							
Florence Crittenton Home...	Mat	NPAasn	70	20	4	57	53
Pontiac, 9,585—Livingston							
Illinois State Penitentiary Hospital.....	Inst	State	40	20	..	..	1,298
Quincy, 40,460—Adams							
Quincy Memorial Sanitarium..	Conv	NPAasn	20	..	..	..	..
Rockford, 84,627—Winnebago							
Children's Convalescent Home and Cottage.....	Orth	NPAasn	30	22	..	..	14
St. Charles, 5,870—Kane							
Illinois State Training School for Boys.....	Inst	State	26	16	..	..	1,116
Urbana, 14,064—Champaign							
McKinley Memorial Hospital.	Gen	State	150	28	..	..	2,343
Wedron, 202—La Salle							
St. Joseph's Health Resort..	Conv	Church	72	61	..	..	1,296
West Chicago, 3,355—Du Page							
Country Home for Convalescent Crippled Children.....	Orth	NPAasn	100	50	..	..	118
(Unit of University of Chicago Clinics)							
Whetton, 7,380—Du Page							
Mary E. Pogue School.....	MeDe	Indiv	65	63	..	..	63
Wheeling, 550—Cook							
Addolorata Villa—Health Resort for Women.....	Conv	Church	41	10	..	..	230

INDIANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions †
Anderson, 41,572—Madison	Mat	Corp	14	6	9	222	313
Hoppes Lying-In Hospital...							
St. John's Hickey Memorial Hospital...	Gen	Church	125	114	32	1,244	4,247
Angola, 3,141—Steuben							
Cameron Hospitals	Gen	NPA'ssn	20	13	5	146	692
Argos, 1,190—Marshall							
Kelly Hospital	Gen	NPA'ssn	10	9	4	34	228
Auburn, 5,415—De Kalb							
Dr. Bonnell M. Souder Hosp.	Gen	Indiv	30	8	10	155	400
Batesville, 3,065—Ripley							
Margaret Mary Hospital.....	Gen	Church	50	33	15	306	1,123
Bedford, 12,514—Lawrence							
Dunn Memorial Hospital.....	Gen	County	65	41	12	444	1,982
Beech Grove, 9,907—Marion							
St. Francis Hospital...	Gen	Church	140	85	55	1,658	4,046
.....	Gen	NPA'ssn	35	28	10	349	1,208
.....	Gen	Corp	43	37	8	104	1,969
Wells County Hospital.....	Gen	County	25	18	6	180	497
Bunker Hill, 792—Miami							
U. S. Naval Air Station	Gen	Navy	120	...	...	Estab.	1943
Cl	Gen	County	42	31	12	357	1,300
.....	n	County	42	36	14	474	1,881
.....	n	NPA'ssn	40	35	15	462	1,238
Culver Hospital...	Gen	County	85	52	18	425	2,286
Crown Point, 4,643—Lake							
James O. Parramore Hosp.	TB	County	280	205	..	...	259
Decatur, 5,861—Adams							
Adams County Memorial Hospital	Gen	County	44	32	18	368	1,433
Dyer, 970—Lake							
Mount Mercy Sanitarium....	N&M	Church	55	52	..	...	569
East Chicago, 54,637—Lake							
St. Catherine's Hospital*AO	Gen	Church	264	203	60	1,426	7,638
Elkhart, 33,434—Elkhart							
Elkhart General Hospital...	Gen	NPA'ssn	90	52	25	916	2,791
Elwood, 10,913—Madison							
Mersey Hospital	Gen	Church	45	22	15	417	1,385
Evansville, 97,062—Vanderburgh							
Boehne Tuberculosis Hosp.*A	TB	County	130	118	..	...	322
Cleaview	N&M	NPA'ssn	16	15	...	...	132
Evansville State Hospital...	Ment	State	1,200	311	Destroyed by fire		
Protestant Deaconess Hos- pitalAO	Gen	Church	169	148	23	1,325	8,267
St. Mary's Hospital*AO.....	Gen	Church	150	130	21	596	4,403
U. S. Marine Hospital*AO.....	Gen	USPHS	100	51	...	...	741
Welborn-Walker Hospital*AO.....	Gen	Corp	115	85	16	467	3,793
Fort Benjamin Harrison,—Marion							
Station Hospital*AO	Gen	Army	154	78	4	27	2,178
Fort Wayne, 118,410—Allen							
Irene Byron Sanatorium.....	TB	Counties	256	228	..	...	550
Lutheran Hospital*AO	Gen	Church	175	152	32	1,152	4,764
Methodist Hospital*AO	Gen	Church	106	79	25	392	2,530
St. Joseph Hospital*AO.....	Gen	Church	290	217	60	1,358	6,834
Frankfort, 13,706—Clinton							
Clinton County Hospital.....	Gen	County	43	32	12	504	1,425
Garrett, 4,285—De Kalb							
Sacred Heart Hospital.....	Gen	Church	42	30	15	205	773
Gary, 111,719—Lake							
Lincoln Hospital.....	Gen	NPA'ssn	40	18	5	55	1,285
Methodist Hospital*AO	Gen	Church	250	138	65	1,375	6,243
St. John Hospital.....	Gen	Indiv	14	2	4	51	800
St. Mary's Mercy Hosp.*AO.....	Gen	Church	218	171	74	1,892	6,814
Greencastle, 4,872—Putnam							
Putnam County Hospital....	Gen	County	46	28	12	270	1,487
Greensburg, 6,065—Decatur							
Decatur County Memorial Hospital	Gen	County	23	20	10	188	782
Hammond, 70,184—Lake							
Mount Mercy Sanitarium....	N&M	Church	32	30	..	...	348
St. Margaret Hospital*AO.....	Gen	Church	236	176	50	1,909	8,147
Hartford City, 6,046—Blackford							
Blackford County Hospital...	Gen	County	30	13	5	258	560
Huntingburg, 3,816—Dubois							
Stark Hospital	Gen	Indiv	11	9	8	190	495
H		County	29	25	12	442	1,112
Indianapolis, 386,972—Marion							
Central State Hospital*AO.....	Ment	State	2,244	2,245	..	...	597
Emhardt Memorial Hospital.	Gen	NPA'ssn	36	25	12	303	2,044
Flower Mission Memorial Hospital	Unit of Indianapolis	City Hospital					
Indianapolis City Hosp.*AO	GenTB City		698	522	39	744	9,657
Indiana University Medical Center*AO	Gen	State	584	478	62	1,476	9,186
Isolation Hospital	Iso	City	150	141	...	...	1,643
James Whitcomb Riley Hos- pital for Children.....	Unit of Indiana	University Medical Center					
Kiwanis Home	Unit of Indiana	University Medical Center					
Methodist Hospital*AO.....	Gen	Church	596	528	90	3,162	20,328
"Norways" Sterne Memorial Hospital	N&M	Corp	30	26	..	...	310
Robert W. Long Hospital...	Unit of Indiana	University Medical Center					
Rotary Convalescent Home...	Unit of Indiana	University Medical Center					
St. Vincent's Hospital*AO.....	Gen	Church	300	246	55	1,723	9,185

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Sunnyside Sanatorium*AO TB	County	246	235	...	...	164	
Veterans Admin. Facility*AO Gen	Vet	345	206	...	...	2,319	
William H. Coleman Hospi- tal for Women..... Unit of Indiana	University Medical Center						
Jeffersonville, 11,493—Clark							
Clark County Memorial Hos- pital*AO Gen	County	85	33	18	385	1,537	
Kendallville, 5,431—Noble							
McCray Memorial Hospital.. Gen	City	33	27	12	302	1,071	
Kokomo, 33,795—Howard							
St. Joseph Memorial Hosp.*AO Gen	Church	80	80	20	905	3,437	
La Fayette, 28,798—Tippecanoe							
La Fayette Home Hosp.*AO Gen	NPA'ssn	130	80	25	592	3,569	
St. Elizabeth Hospital*AO Gen	Church	285	176	44	932	6,609	
William Ross Sanatorium... TB	County	40	24	...	...	30	
La Porte, 16,180—La Porte							
Fairview Hospital Gen	NPA'ssn	30	20	8	177	685	
Holy Family Hospital..... Gen	Church	114	100	22	780	4,805	
Lebanon, 6,529—Boone							
Witham Memorial Hospital.. Gen	County	70	51	20	426	1,453	
Linton, 6,263—Greene							
Freeman Greene County Hos- pital Gen	County	56	22	10	448	1,523	
Logansport, 20,177—Cass							
Cass County Hospital..... Gen	County	70	52	15	370	2,000	
Logansport State Hosp.*AO Ment	State	2,395	2,538	...	...	821	
St. Joseph Hospital..... Gen	Church	60	45	13	327	1,405	
Madison, 6,923—Jefferson							
Kings Daughters Hospital... Gen	NPA'ssn	50	20	10	255	1,073	
Marion, 26,767—Grant							
Marion General Hospital... Gen	NPA'ssn	80	46	20	707	3,322	
Veterans Admin. Facility.... See Veterans Administration Hospital, Ind.							
Martinsville, 5,609—Morgan							
Morgan County Memorial Hospital Gen	County	19	11	10	225	893	
Michigan City, 26,476—La Porte							
Clinic Hospital*AO Gen	Corp	50	37	12	71	1,782	
Indiana Hospital for Insane Criminals Ment	State	342	328	...	...	40	
Indiana State Prison Hosp.. Inst	State	200	110	...	...	460	
Michigan City Sanitarium... Gen	Corp	32	20	...	...	531	
St. Anthony's Hospital*AO Gen	Church	90	64	26	690	2,339	
Mishawaka, 29,298—St. Joseph							
St. Joseph Hospital*AO Gen	Church	100	67	20	880	2,842	
Mooresville, 1,979—Morgan							
Comer's Sanitarium Proct	Indiv	14	10	...	...	331	
Muncie, 49,720—Delaware							
Ball Memorial Hospital*AO Gen	NPA'ssn	229	170	36	1,548	6,506	
New Albany, 25,414—Floyd							
St. Edward Hospital*AO Gen	Church	116	65	26	694	2,490	
"Silvercrest" Southern Indiana Tuberculosis Hospital TB	State	152	132	...	...	165	
New Castle, 16,620—Henry							
Clinic Hospital Gen	Part	18	15	4	279	1,336	
Henry County Hospital*AO Gen	County	90	60	18	461	3,751	
North Madison, 316—Jefferson							
Madison State Hospital.... Ment	State	1,580	1,704	...	...	378	
Peru, 12,432—Miami							
Duke's-Miami County Memorial Hospital Gen	County	60	48	42	432	1,260	
Wabash Railroad Employees Hospital*AO Indus	NPA'ssn	50	29	...	...	601	
Plymouth, 5,713—Marshall							
Parkview Hospital Gen	County	31	32	12	430	1,237	
Portland, 6,362—Jay							
Jay County Hospital..... Gen	County	35	39	10	373	1,844	
Princeton, 7,786—Gibson							
Gibson General Hospital*AO Gen	NPA'ssn	31	24	6	304	1,106	
Rensselaer, 3,214—Jasper							
Jasper County Hospital..... Gen	County	45	29	10	344	1,181	
Richmond, 35,147—Wayne							
Reid Memorial Hospital*AO Gen	NPA'ssn	140	105	26	1,056	5,630	
Richmond State Hospital.... Ment	State	1,732	1,689	...	...	345	
Smith-Esteb Memorial Hosp. TB	County	50	35	...	...	48	
Rochester, 3,835—Fulton							
Woodlawn Hospital Gen	Indiv	34	22	5	169	686	
Rockville, 2,208—Parke							
Indiana State Sanatorium... TB	State	250	199	...	...	260	
Rome City, 504—Noble							
Knapp Springs Sanatorium.. Gen	Church	175	...	...	...	1,885	
Rushville, 5,960—Rush							
City Hospital Gen	City	12	10	7	243	388	
Seymour, 8,620—Jackson							
Schneck Memorial Hospital.. Gen	County	50	15	15	548	1,326	
Shelbyville, 10,791—Shelby							
W. S. Major Hospital..... Gen	City	46	31	10	294	1,359	
South Bend, 101,268—St. Joseph							
Epworth Hospital*AO Gen	NPA'ssn	225	159	45	1,460	9,065	
Healthwin Hospital*AO TB	County	185	169	...	...	195	
St. Joseph's Hospital*AO Gen	Church	176	117	42	1,239	4,717	
Sullivan, 5,077—Sullivan							
Mary Sherman Memorial Hos- pital*AO Gen	County	50	33	12	283	1,371	
Tell City, 5,395—Perry							
Parkview Hospital Gen	Indiv	14	3	2	14	161	
Terre Haute, 62,693—Vigo							
Hoover's Sanatorium Gen	Indiv	10	2	3	40	1,769	
St. Anthony's Hospital*AO Gen	Church	176	105	26	629	3,281	
Union Hospital*AO Gen	NPA'ssn	169	131	27	628	4,314	
Tipton, 5,101—Tipton							
Emergency Hospital Gen	Part	10	7	2	115	493	

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Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Union City, 3,535—Randolph							
Union City Hospital..... Gen	Part		12	0	3	89	569
Valparaiso, 5,736—Porter							
Porter Memorial Hospital..... Gen	County		56	50	20	600	1,860
Veterans Administration Hospital, 507—Grant							
Veterans Admin. Facility..... Ment	Vet		1,500	1,530	..	...	291
Vincennes, 18,228—Knox							
Good Samaritan Hospital..... Gen	County		92	74	14	382	2,605
Hillcrest Tuberculosis Hosp. TB	County		65	28	..	...	37
Wabash, 9,651—Wabash							
Wabash County Hospital..... Gen	County		65	37	15	348	1,358
Warsaw, 6,378—Kosciusko							
McDonald Hospital..... Gen	Indiv		36	21	10	316	996
Murphy Medical Center..... Gen	Indiv		21	15	10	176	712
Washington, 9,312—Davies							
Davies County Hospital..... Gen	County		90	61	12	113	2,555
Williamsport, 1,222—Warren							
Maris Hospital..... Gen	Part		22	11	5	109	482
Winchester, 5,503—Randolph							
Randolph County Hospital..... Gen	County		40	32	13	289	1,072
Wolfske, 250—Noble							
Lucky Hospital..... Gen	Indiv		20	9	6	119	346
Related Institutions							
Ander-son, 41,572—Madison							
Citizens Nursing Center..... Gen	Part		11	8	4	168	756
Ella B. Kohler Hospital..... TB	County		50	25	..	...	65
Butler-ville, 266—Jennings							
Muscatatuck State School..... McDe	State		1,200	1,230	..	...	150
Evansville, 97,002—Vanderburgh							
French Hospital..... Proct	NPAasn		6	1	..	...	318
Fort Wayne, 118,410—Allen							
Fort Wayne State School..... McDe	State		1,908	1,918	..	...	151
Grace Convalescent Hospital, Conv	Indiv		70	16	..	...	57
Medical Center Hospital..... Gen	Indiv		21	12	11	239	655
Greencastle, 1,872—Putnam							
Indiana State Farm Hosp., Inst	State		15	11	..	...	397
Greensburg, 6,065—Decatur							
Odd Fellows Home Hospital, Inst	NPAasn		65	50	..	...	75
Hammond, 70,184—Lake							
Kuhn Clinic Hospital..... ENT	Indiv		11	5	..	...	1,819
Indianapolis, 286,972—Marion							
Summa Coleman Home..... Mat	NPAasn		20	12	20	41	12
Knightstown, 2,223—Henry							
Indiana Soldiers' and Soldiers'							
Children's Home..... Inst	State		40	22	..	...	808
La Fayette, 28,778—Tippecanoe							
Indiana State Soldiers' Home							
Hospital..... Inst	State		129	63	..	...	379
Lagrange, 1,814—Lagrange							
Lagrange County Hospital..... Gen	County		14	10	..	...	136
Martinsville, 5,009—Morgan							
Home Lawn Mineral Springs Conv	Corp		162	108	..	...	2,124
Martinsville Sanitarium..... Conv	Corp		150	53	..	...	1,602
New Castle, 16,620—Henry							
Indiana Village for Epileptics Epil	State		1,035	1,002	..	...	157
Pendleton, 1,681—Madison							
Indiana State Reformatory							
Hospital..... Inst	State		86	2	..	...	761
Plainfield, 1,811—Hendricks							
Indiana Boys' School Hosp. Inst	State		20	1	..	...	241
Wilkinson, 236—Hancock							
Dr. Charles Titus Hospital..... ENT	Indiv		7	1	..	...	380

IOWA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Akron, 1,314—Plymouth							
Akron Hospital..... Gen	Indiv		11	5	3	95	290
Algona, 4,951—Kossuth							
Kossuth Hospital..... Gen	Indiv		31	20	6	158	600
Alta, 1,269—Buena Vista							
Alta Community Hospital..... Gen	NPAasn		13	7	5	30	197
Ames, 12,555—Story							
Iowa State College Hospital..... Inst	State		73	11	..	...	1,217
Anamosa, 4,009—Jones							
Mersey Hospital..... Gen	Church		30	22	10	227	778
Atlantic, 5,802—Cass							
Atlantic Hospital..... Gen	Corp		50	27	10	251	990
Battle Creek, 827—Iowa							
Battle Creek Hospital..... Gen	Part		16	7	5	72	239
Belmond, 2,109—Wright							
Belmond Hospital..... Gen	Part		11	7	4	110	411
Buffalo Center, 911—Winnebago							
Dolmage Hospital..... Gen	Part		13	6	8	89	256
Burlington, 25,832—Des Moines							
Burlington Protestant Hos-							
pital..... Gen	NPAasn		105	79	20	413	3,003
Mersey Hospital..... Gen	Church		70	65	25	420	2,204
St. Francis Hospital..... Gen	Church		50	10	15	223	1,522
Carroll, 5,380—Carroll							
St. Anthony Hospital..... Gen	Church		111	79	31	667	3,289
Cedar Falls, 9,349—Black Hawk							
Sartori Memorial Hospital..... Gen	City		38	24	9	281	953
Cedar Rapids, 62,120—Linn							
Mersey Hospital..... Gen	Church		147	109	32	768	3,862
St. Luke's Methodist Hospi-							
tal..... Gen	Church		155	153	25	946	5,498
Centerville, 8,413—Appanoose							
St. Joseph's Mercy Hospital..... Gen	Church		50	39	6	289	1,058

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Chariton, 5,751—Lucas							
Yocum Hospital..... Gen	Indiv		25	11	0	83	512
Charles City, 8,681—Floyd							
Cedar Valley Hospital..... Gen	City		60	39	15	348	1,884
Cherokee, 7,469—Cherokee							
Cherokee State Hospital..... Ment	State		1,700	1,686	..	...	383
Sioux Valley Hospital..... Gen	NPAasn		35	26	12	235	1,232
Clarinda, 4,905—Page							
Clarinda Municipal Hospital Gen	City		40	20	10	178	1,111
Clarinda State Hospital..... Ment	State		1,714	1,567	..	...	372
Clarion, 2,971—Wright							
Clarion General Hospital and							
Clinic..... Gen	Part		16	6	8	128	284
Clinton, 26,270—Clinton							
Jane Lamb Memorial Hosp. Gen	NPAasn		100	77	15	411	2,977
St. Joseph Mercy Hospital Gen	Church		85	66	15	408	1,782
Colfax, 2,252—Jasper							
Colfax Sanitarium..... Gen	Corp		18	8	1	17	250
Council Bluffs, 41,439—Pottawattamie							
Jennie Edmundson Memorial							
Hospital..... Gen	NPAasn		124	86	24	720	3,660
Mersey Hospital..... Gen	Church		150	95	20	460	3,845
St. Bernard's Hospital..... N&M	Church		180	162	..	...	374
Cresco, 3,530—Howard							
St. Joseph Mercy Hospital..... Gen	Church		25	11	8	164	565
Davenport, 66,079—Scott							
Mersey Hospital..... Gen	Church		180	149	40	1,156	5,652
Pine Knoll Sanatorium..... TB	County		100	60	..	...	115
St. Elizabeth's and St. John's							
Hospital..... Units of Mercy Hospital							
St. Luke's Hospital..... Gen	Church		88	92	22	820	3,119
Decorah, 5,302—Winnebago							
Decorah Lutheran Hospital..... Gen	Church		30	21	9	290	1,080
Denison, 4,361—Crawford							
Denison Hospital..... Gen	Indiv		15	7	7	120	461
Des Moines, 159,819—Polk							
Broadlawn Polk County Pub-							
lic Hospital..... Gen	County		150	94	24	180	2,623
Broadlawn Polk County Pub-							
lic Hospital..... Iso	County		59	19	..	...	548
Broadlawn Polk County Pub-							
lic Hospital..... TB	County		87	56	..	...	72
Iowa Lutheran Hospital..... Gen	Church		135	121	20	580	4,293
Iowa Methodist Hosp. Gen	Church		240	188	30	1,278	8,333
Mersey Hospital..... Gen	Church		163	140	30	954	5,357
The Retreat..... N&M	Corp		50	38	..	...	164
Veterans Admin. Facility..... Gen	Vet		393	261	..	...	2,663
Dexter, 760—Dallas							
Clinic Hospital..... Gen	Part		12	9	6	65	415
Dubuque, 43,892—Dubuque							
Finley Hospital..... Gen	NPAasn		105	80	20	523	2,317
St. Joseph Mercy Hospital..... Gen	Church		130	95	28	732	3,376
St. Joseph Sanitarium..... N&M	Church		200	211	..	...	555
Sunny Crest Sanatorium..... TB	County		70	56	..	...	59
Emmetsburg, 3,374—Palo Alto							
Emmetsburg Hospital..... Gen	NPAasn		24	11	8	164	674
Estherville, 5,651—Emmet							
Coleman Hospital..... Gen	NPAasn		25	19	7	194	752
Forest City, 2,545—Winnebago							
Irish Hospital..... Gen	Indiv		14	9	7	185	365
Fort Des Moines, —Polk							
Station Hospital..... Gen	Army		73	59	4	35	1,161
Fort Dodge, 22,004—Webster							
Lutheran Hospital..... Gen	Church		112	90	18	612	3,331
St. Joseph Mercy Hospital Gen	Church		128	79	18	401	2,547
Fort Madison, 14,063—Lee							
Atchison, Topeka and Santa							
Fe Railway Employees' Hos-							
pital..... Indus	NPAasn		43	12	..	...	367
Sacred Heart Hospital..... Gen	Church		60	55	18	399	2,435
Grinnell, 5,210—Powshelek							
Community Hospital..... Gen	NPAasn		54	20	6	150	874
St. Francis Hospital..... Gen	Church		30	18	10	81	412
Hamburg, 2,187—Fremont							
Hamburg Hospital..... Gen	Indiv		27	23	8	132	1,033
Hampton, 4,006—Franklin							
Lutheran Hospital..... Gen	Church		46	29	10	235	1,131
Hartley, 1,503—O'Brien							
Hand Hospital..... Gen	Indiv		12	5	4	53	308
Hull, 1,072—Sioux							
Hull Hospital..... Gen	Corp		15	10	5	23	465
Ida Grove, 2,238—Ida							
Ida Grove General Hospital Gen	Part		12	4	4	43	207
Independence, 4,342—Buchanan							
Independence State Hospital. Ment	State		1,822	1,757	..	...	421
Peoples Hospital..... Gen	NPAasn		32	17	11	195	675
Iowa City, 17,182—Johnson							
Children's Hospital..... Unit of University Hospitals							
Iowa State Psychopathic							
Hospital..... Ment	State		60	36	..	...	162
Mersey Hospital..... Gen	Church		110	99	23	572	2,582
University Hospitals..... Gen	State		900	672	54	1,025	17,674
Iowa Falls, 4,425—Hardin							
Ellsworth Municipal Hospital Gen	City		35	30	12	189	1,384
Keokuk, 15,076—Lee							
Graham Hospital..... Gen	NPAasn		75	43	11	187	2,242
St. Joseph's Hospital..... Gen	Church		110	93	15	370	2,714
Knoxville, 6,936—Marion							
Veterans Admin. Facility..... Ment	Vet		1,443	1,346	..	...	472
Lake City, 2,216—Calhoun							
McCrory Hospital..... Gen	Indiv		15	7	7	96	280
McVay Memorial Hospital..... Gen	Part		15	9	5	60	320

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Le Mars, 5,353—Plymouth Sacred Heart Hospital▲.....	Gen	Church	40	23	10	319	1,161
Leon, 2,307—Decatur							
Decatur County Hospital....	Gen	County	22	13	5	152	697
Maquoketa, 4,076—Jackson City Memorial Hospital.....	Gen	Indiv	20	6	7	119	502
Marshalltown, 19,240—Marshall Evangelical Deaconess Home and Hospital.....	Gen	Church	150	117	20	504	3,440
St. Thomas Mercy Hospital.....	Gen	Church	85	42	15	314	1,160
Mason City, 27,080—Cerro Gordo Park Hospital▲.....	Gen	Corp	50	38	12	247	1,582
St. Joseph's Mercy Hosp.▲.....	Gen	Church	175	81	25	448	2,906
McGregor, 1,309—Clayton McGregor Hospital.....	Gen	Indiv	10	5	3	26	143
Monticello, 2,546—Jones John McDonald Hospital.....	Gen	NPAasn	45	21	10	192	784
Mount Pleasant, 4,610—Henry Mount Pleasant State Hosp. Ment	State		1,622	1,514	..	..	202
Muscatine, 18,286—Muscatine Bellevue Hospital.....	Gen	NPAasn	45	30	12	230	1,313
Benjamin Hershey Memorial Hospital.....	Gen	NPAasn	50	29	14	296	1,308
New Hampton, 2,933—Chickasaw St. Joseph's Hospital▲.....	Gen	Church	51	35	12	220	1,337
Newton, 10,462—Jasper Mary Frances Skiff Memorial Hospital.....	Gen	City	48	40	12	251	1,000
Oakdale, —Johnson State Sanatorium▲.....	TB	State	425	393	..	..	300
Oelwein, 7,801—Fayette Mercy Hospital.....	Gen	Church	36	22	12	276	1,061
Onawa, 3,438—Monona Onawa Hospital.....	Gen	Indiv	25	8	6	70	517
Oseola, 3,281—Clarke Bates Hospital.....	Gen	Indiv	25	10	4	34	324
Harken Hospital.....	Gen	Indiv	30	16	6	58	638
Oseola Hospital.....	Gen	Indiv	20	9	5	164	812
Oskaloosa, 11,024—Mahaska Mercy Hospital.....	Gen	Part	30	24	8	167	901
Ottumwa, 31,570—Wapello Ottumwa Hospital.....	Gen	NPAasn	53	51	12	311	1,703
St. Joseph Hospital.....	Gen	Church	100	70	20	479	2,932
Sunnyslope Sanatorium▲.....	TB	County	106	61	..	..	39
U. S. Naval Air Station Dispensary.....	Gen	Navy	136	..	..	Etab.	1943
Perry, 5,977—Dallas Kings Daughters Hospital... Gen	NPAasn		20	13	6	131	527
Pleasantville, 895—Marion Community Hospital.....	Gen	Indiv	10	4	2	16	151
Red Oak, 5,763—Montgomery Murphy Memorial Hospital... Gen	City		26	18	12	293	817
Rock Rapids, 2,556—Lyon W. Vander Wilt Hospital... Gen	Indiv		20	8	5	91	389
Sheldon, 3,768—O'Brien Sheldon Good Samaritan Hospital.....	Gen	Church	20	12	6	80	326
Shenandoah, 6,846—Page Henry and Catherine L. Hand Memorial Hospital.....	Gen	NPAasn	40	26	8	211	1,161
Sibley, 2,356—Oseola Oseola Hospital.....	Gen	Part	16	9	6	79	461
Sigourney, 2,355—Keokuk Sigourney Hospital.....	Gen	Indiv	10	3	3	32	171
Sioux City, 82,364—Woodbury Lutheran Hospital▲.....	Gen	Church	95	66	10	297	2,100
Methodist Hospital▲.....	Gen	Church	110	73	15	379	3,103
St. Joseph Mercy Hospital▲.....	Gen	Church	250	163	50	831	6,949
St. Vincent's Hospital.....	Gen	Church	122	102	14	480	4,671
Spencer, 6,599—Clay Spencer Municipal Hospital... Gen	City		26	10	9	221	640
Spirit Lake, 2,101—Dickinson Spirit Lake Hospital.....	Gen	Part	15	9	6	86	439
Storm Lake, 5,274—Buena Vista Porath Hospital.....	Gen	Indiv	11	11	8	268	370
Vinton, 4,163—Benton Virginia Gay Hospital.....	Gen	City	25	19	6	161	593
Washington, 5,227—Washington Washington County Hosp.▲.....	Gen	County	50	29	12	269	1,030
Waterloo, 51,743—Black Hawk Allen Memorial Hospital.....	Gen	NPAasn	75	53	20	739	3,430
Presbyterian Hospital.....	Gen	NPAasn	34	26	10	229	1,418
St. Francis Hospital▲.....	Gen	Church	110	75	25	665	2,974
Waverly, 4,156—Bremer St. Joseph Mercy Hospital▲.....	Gen	Church	50	28	10	252	863
West Union, 2,039—Fayette West Union Community Hospital.....	Gen	City	20	6	6	90	277
Related Institutions							
Anamosa, 4,069—Jones Men's Reformatory Hospital Inst	State		40	1	..	..	389
Des Moines, 159,819—Polk Benedict Home.....	Mat	NPAasn	30	6	15	5	7
Junior League Convalescent Home for Children.....	Conv	NPAasn	20	16	..	..	89
Salvation Army Booth Memorial Hospital.....	Mat	Church	50	19	15	71	81
Fldora, 3,553—Hardin Iowa Training School for Boys Hospital.....	Inst	State	30	12	..	..	1,240

IOWA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Fort Madison, 14,063—Lee Iowa State Penitentiary Hospital.....	Inst	State	36	18	..	..	227
Glenwood, 4,501—Mills Glenwood State School.....	MeDe	State	1,933	1,828	..	..	420
Harlan, 3,727—Shelby Harlan Hospital.....	Gen	Part	15	9	6	125	378
Marshalltown, 19,240—Marshall Iowa Soldiers' Home Hosp. Inst	State		140	80	..	..	400
Orange City, 1,920—Sioux Doornink Hospital.....	Gen	Indiv	10	3	2	30	174
Postville, 1,194—Allamakee Postville Community Hosp. Gen	City		15	6	4	66	326
Red Oak, 5,763—Montgomery Powell School for Backward and Nervous Children.....	MeDe	Indiv	55	50	..	..	12
Sioux City, 82,364—Woodbury Florence Crittenton Home... Mat	NPAasn		39	15	40	44	55
Toledo, 2,073—Tama State Juvenile Home Hosp. Inst	State		30	7	..	..	1,621
Waukon, 2,972—Allamakee Rominger and Jeffries Emergency Hospital.....	Gen	Part	7	2	..	..	95
Woodward, 895—Dallas Hospital for Epileptics and School for Feeble-minded... MeDe	State		1,693	1,550	227

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Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Abilene, 5,671—Dickinson Dickinson County Memorial Hospital.....	Gen	NPAasn	35	19	8	100	1,016
Anthony, 2,873—Harper Galloway Hospital.....	Gen	Indiv	32	30	7	160	1,503
Arkansas City, 12,732—Cowley Mercy Hospital.....	Gen	NPAasn	37	10	7	207	660
Stricklen Hospital.....	Gen	NPAasn	31	5	6	43	234
Atchison, 12,048—Atchison Atchison Hospital.....	Gen	NPAasn	49	23	9	336	983
..... Gen	Indiv		12	5	5	63	347
Patterson Memorial Hospital Gen	Indiv		20	11	6	76	344
Beloit, 3,705—Mitchell Community Hospital▲.....	Gen	NPAasn	44	23	11	212	1,206
Caldwell, 1,862—Sumner Caldwell General Hospital... Gen	NPAasn		20	7	5	68	404
Chanute, 10,142—Neosho Johnson Hospital.....	Gen	Corp	50	27	8	95	1,108
Coffeyville, 17,355—Montgomery Coffeyville General Hospital... Gen	Indiv		10	3	1	11	140
Medical Center Hospital.....	Gen	NPAasn	18	12	7	180	...
Southeast Kansas Hospital. Gen	NPAasn		20	13	5	193	684
Colby, 2,458—Thomas St. Thomas Hospital.....	Gen	Church	32	26	13	237	913
Columbus, 3,402—Cherokee Maude Norton Memorial City Hospital.....	Gen	City	21	16	5	32	482
Concordia, 6,255—Cloud St. Joseph's Hospital▲.....	Gen	Church	86	83	17	294	2,199
Dodge City, 8,487—Ford St. Anthony Hospital▲.....	Gen	Church	67	58	20	382	2,368
El Dorado, 10,045—Butler Susan B. Allen Memorial Hospital.....	Gen	NPAasn	60	41	14	356	1,683
Ellsworth, 2,227—Ellsworth Ellsworth Hospital.....	Gen	NPAasn	43	32	9	169	1,263
Emporia, 13,188—Lyon Newman Memorial County Hospital.....	Gen	County	80	57	20	317	2,297
St. Mary's Hospital.....	Gen	Church	69	32	11	131	1,179
Fort Leavenworth, 4,982—Leavenworth Station Hospital▲.....	Gen	Army	155	81	5	24	1,632
Station Hospital, U. S. Disciplinary Barracks.....	Gen	Army	180	..	..	..	..
Fort Riley, —Geary Station Hospital▲.....	Gen	Army	181	106	8	108	2,429
Fort Scott, 10,577—Bourbon Mercy Hospital▲.....	Gen	Church	120	90	10	348	2,392
Garden City, 6,285—Finney St. Catherine's Hospital▲.....	Gen	Church	65	41	16	241	1,436
Gardner, 510—Johnson Reece Hospital.....	Gen	Indiv	16	8	6	98	173
Girard, 2,554—Crawford Girard General Hospital.....	Gen	City	20	13	4	96	502
Goessel, 300—Marion Mennonite Bethesda Hospital Gen	Church		15	8	6	96	427
Goodland, 3,306—Sherman Boothroy Memorial Hospital Gen	Church		24	15	7	171	1,019
Great Bend, 9,044—Barton St. Rose Hospital▲.....	Gen	Church	120	86	22	636	3,773
Halstead, 1,397—Harvey Halstead Hospital▲.....	Gen	Church	170	115	8	96	3,680
Harper, 1,695—Harper Joslin Hospital.....	Gen	Indiv	10	6	4	71	221
Hays, 6,365—Ellis Hadley Memorial Hospital... Gen	Church		50	17	5	63	688
St. Anthony's Hospital▲.....	Gen	Church	100	95	25	473	3,331
Hillsboro, 1,580—Marion Salem Hospital.....	Gen	Church	20	15	8	114	545

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Holsington, 3,719—Barton							
Holsington Hospital.....	Gen	NPAasn	15	8	4	76	520
Horton, 2,572—Brown							
Horton Hospital.....	Gen	Part	25	20	10	208	860
Hutchinson, 30,013—Reno							
Grace Hospital.....	Gen	Church	111	87	10	731	3,810
St. Elizabeth Mercy Hosp.	Gen	Church	65	37	17	590	1,574
U. S. Naval Air Station Dis- pensary.....		Navy	110	...	...	Estab. 1913	
Independence, 11,565—Montgomery							
Mercy Hospital.....	Gen	Church	65	16	15	314	1,659
Iola, 7,344—Allen							
St. John's Hospital.....	Gen	Church	30	15	8	198	960
Junction City, 8,507—Geary							
Junction City Municipal Hos- pital.....	Gen	City	10	30	16	355	1,155
Kansas City, 121,458—Wyandotte							
Bell Memorial Hospital.....	Unit of University of Kansas Hospitals						
Bethany Hospital.....	Gen	Church	115	116	30	731	4,036
Douglas Hospital.....	Gen	Church	25	14	3	62	390
Grandview Sanitarium.....	N&M	Indiv	37	22	...	...	194
Providence Hospital.....	Gen	Church	99	89	23	616	3,331
St. Margaret's Hospital.....	Gen	Church	203	111	25	340	4,181
University of Kansas Hospi- tal.....	Gen	State	325	298	25	576	7,343
Larned, 3,331—Pawnee							
Larned State Hospital.....	Ment	State	1,542	1,416	...	...	268
Lawrence, 14,300—Douglas							
Haskell Institute Hospital... Inst	IA		40	4	...	...	239
Lawrence Memorial Hospital. Gen	City		67	43	20	551	2,209
Sunflower Ordnance Works Hospital.....	Indus	NPAasn	20	10	...	...	3,600
Watkins Memorial Hospital. Inst	State		62	18	...	...	1,430
Leavenworth, 19,220—Leavenworth							
Cushing Memorial Hosp.	Gen	NPAasn	61	43	10	332	1,801
St. John's Hospital.....	Gen	Church	65	51	10	177	1,109
U. S. Penitentiary Hospital. Inst	USPHS		165	93	...	...	1,180
Liberal, 4,410—Seward							
Epworth Hospital.....	Gen	Church	47	15	10	194	766
Little River, 603—Rice							
Hoffman Memorial Hospital. Gen	City		16	5	3	50	211
Lyons, 4,497—Rice							
Lyons Hospital.....	Gen	NPAasn	20	10	6	120	393
Manhattan, 11,659—Riley							
St. Mary Hospital.....	Gen	Church	50	47	15	333	1,737
Marysville, 4,035—Marshall							
Marysville Hospital.....	Gen	Indiv	11	8	4	30	200
Randell Hospital.....	Gen	Indiv	16	5	6	57	294
Pherson, 7,191—McPherson							
McPherson County Hospital. Gen	County		60	40	12	222	1,105
Alvane, 910—Sumner							
Atchison, Topeka and Santa Fe Railway Hospital.....	Indus	NPAasn	50	10	...	...	333
Neodesha, 3,376—Wilson							
Wilson County Hospital.....	Gen	County	25	18	8	118	630
Newton, 11,048—Harvey							
Axtell Christian Hospital.....	Gen	Church	55	31	12	115	1,140
Bethel Deaconess Hospital.....	Gen	Church	61	52	12	289	1,791
Norton, 2,762—Norton							
Kennedy Memorial Hospital... Unit of State Sanatorium for Tuberculosis							
Norton Hospital.....	Gen	City	21	16	7	151	514
State Sanatorium for Tubercu- losis.....	TB	State	432	410	...	...	296
Norwich, 411—Kingman							
Wallace Hospital.....	Gen	Indiv	7	4	2	14	100
Oberlin, 1,878—Decatur							
Benton Memorial Hospital... Gen	Part		15	6	5	78	348
Olathe, 3,979—Johnson							
U. S. Naval Air Station Dis- pensary.....	Gen	Navy	120	...	...	...	...
Oswatimie, 4,115—Miami							
Oswatimie State Hospital... Ment	State		1,750	1,691	...	...	331
Ottawa, 10,193—Franklin							
Ransom Memorial Hospital. Gen	County		25	15	12	173	1,025
Parsons, 14,294—Labette							
Kansas Ordnance Plant Hosp. Indus	NPAasn		10	4	...	...	818
Mercy Hospital.....	Gen	Church	48	32	22	396	1,178
Missouri-Kansas-Texas Rail- road Employees' Hospital... Indus	NPAasn		50	...	No data supplied	...	...
State Hospital for Epileptics Epil	State		862	785	...	...	66
Pittsburg, 17,571—Crawford							
Mount Carmel Hospital.....	Gen	Church	80	68	12	460	2,203
Pratt, 6,591—Pratt							
Minnescah Hospital.....	Gen	Corp	35	25	15	229	1,255
Russell, 4,819—Russell							
Russell City Hospital.....	Gen	City	25	...	12	Estab. 1913	
Sabetha, 2,341—Nemaha							
St. Anthony Murdock Memo- rial Hospital.....	Gen	Church	100	35	12	153	1,375
Sallina, 21,073—Salline							
Asbury Protestant Hosp.	Gen	Church	80	50	23	391	1,884
St. John's Hospital.....	Gen	Church	85	64	16	435	2,143
Scott City, 1,848—Scott							
Scott City Hospital.....	Gen	NPAasn	11	8	4	83	423
Spearville, 603—Ford							
Perkins Hospital.....	Gen	NPAasn	10	7	3	37	341
Stafford, 2,011—Stafford							
Feldhut Memorial Hospital... Gen	NPAasn		30	14	6	112	500

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Sterling, 2,215—Rice							
Sterling Hospital.....	Gen	NPAasn	20	14	4	64	672
Syracuse, 1,226—Hamilton							
Donohue Memorial Hospital... Gen	County		18	9	6	86	422
Topeka, 67,833—Shawnee							
Atchison, Topeka and Santa Fe Railway Hospital.....	Indus	NPAasn	140	92	...	...	2,425
Christ's Hospital.....	Gen	Church	100	70	20	413	1,895
Jane O. Stormont Hospital.....	Gen	NPAasn	115	69	25	497	2,064
Menninger Sanitarium.....	N&M	Corp	60	45	...	...	116
St. Francis Hospital.....	Gen	Church	100	90	22	566	2,691
Security Benefit Assn. Hosp. Gen	NPAasn		156	84	...	...	2,221
Topeka State Hospital.....	Ment	State	1,886	1,867	...	...	329
Wadsworth, 2,300—Leavenworth							
Veterans Admin. Facility.....	GenTbVet		742	490	...	...	3,487
Wamego, 1,767—Pottawatomie							
Genn Hospital.....	Gen	City	15	12	4	102	455
Wellington, 7,216—Sumner							
St. Luke's Hospital.....	Gen	NPAasn	25	18	8	174	862
Wichita, 114,966—Sedgwick							
Coffman Hospital.....	Gen	Corp	15	4	2	18	294
St. Francis Hospital.....	Gen	Church	380	361	70	2,178	13,721
Sedgwick County Hospital... Gen	County		65	37	3	61	1,523
Sedgwick County Tubercu- losis Sanitarium.....	TB	County	50	32	...	...	40
Veterans Admin. Facility.....	Gen	Vet	248	145	...	...	1,649
Wesley Hospital.....	Gen	Church	315	248	54	1,503	9,246
Wichita Hospital.....	Gen	Church	132	119	25	738	3,777
Winfield, 9,506—Cowley							
St. Mary's Hospital.....	Gen	Church	55	40	9	167	1,451
William Newton Memorial Hospital.....	Gen	City	50	42	10	317	1,547

Related Institutions

Ashland, 1,186—Clark							
Ashland Hospital.....	Gen	NPAasn	10	5	4	98	373
Fort Dodge, 530—Ford							
Kansas State Soldiers' Home Hospital.....	Inst	State	28	12	...	...	261
Lansing, 812—Leavenworth							
Kansas State Penitentiary Hospital.....	Inst	State	55	30	...	...	654
Manhattan, 11,659—Riley							
Kansas State College Hosp. Inst	State		70	15	...	...	1,707
Topeka, 67,833—Shawnee							
Florence Crittenton Home... Mat	NPAasn		20	9	16	22	30
Wichita, 114,966—Sedgwick							
Salvation Army Home and Hospital.....	Mat	Church	50	20	30	79	87
Suburban Rest Sanitarium... N&M	Indiv		40	25	...	...	87
Winfield, 9,506—Cowley							
State Training School.....	MeDe	State	1,275	1,236	...	...	81

KENTUCKY

Hospitals and Sanatoriums

Albany, 1,259—Clinton							
Maple Hill Hospital.....	Gen	Part	13	6	6	67	382
Anchorage, 609—Jefferson							
Hord's Sanatorium.....	N&M	Indiv	55	36	...	...	61
Ashland, 29,537—Boyd							
Federal Correctional Institu- tion.....	Inst	USPHS	31	26	...	...	902
Kings Daughters Hospital... Gen	NPAasn		86	63	15	747	2,333
Berea, 2,176—Madison							
Berea College Hospital.....	GenIso	NPAasn	125	25	5	95	2,075
Beverly, 306—Bell							
Red Bird Evangelical Hosp. Gen	Church		10	4	4	44	175
Bowling Green, 14,585—Warren							
City Hospital.....	Gen	City	50	23	8	222	1,580
Corbin, 7,893—Whitley							
Smith Hospital.....	Gen	Indiv	32	15	4	75	581
Covington, 62,018—Kenton							
Covington-Kenton County Tuberculosis Sanatorium... TB	County		17	17	...	...	32
St. Elizabeth Hospital.....	Gen	Church	312	207	55	1,897	5,938
Wm. Booth Memorial Hosp.	Gen	Church	103	85	22	792	3,024
Cynthiana, 4,840—Harrison							
Harrison Memorial Hospital. Gen	NPAasn		30	18	8	80	435
Danville, 6,734—Boyle							
Ephraim McDowell Memorial Hospital.....	Gen	NPAasn	76	51	14	235	2,320
Dayton, 8,379—Campbell							
Speers Memorial Hospital... Gen	County		100	69	15	447	3,335
Fort Knox, —Hardin							
Station Hospital.....	Gen	Army	259	140	5	42	3,279
Fort Thomas (Newport P. O.), —Campbell							
Station Hospital.....	Gen	Army	142	86	3	14	1,304
Frankfort, 11,492—Franklin							
Kings Daughters Hospital... Gen	NPAasn		75	38	16	274	1,824
Fulton, 3,308—Fulton							
Fulton Hospital.....	Gen	Part	14	2	3	65	300
Georgetown, 4,420—Scott							
John Graves Ford Memorial Hospital.....	Gen	CyCo	26	9	6	78	498
Gilbertsville, 329—Marshall							
Kentucky Dam Hospital.....	Gen	Fed	17	1	7	11	222

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Glasgow, 5,815—Barren T. J. Samson Community Hospital ¹	Gen	NPAssn	67	60	12	168	2,390
Grayson, 1,176—Carter J. Q. Stovall Memorial Hosp. Gen	Corp		20	13	4	64	628
Greenville, 2,347—Muhlenberg Muhlenberg Community Hospital.....	Gen	NPAssn	34	22	5	180	1,444
Harlan, 5,122—Harlan Harlan Hospital.....	Gen	Corp	75	42	7	101	1,504
Harrodsburg, 4,673—Mercer A. D. Price Memorial Hosp. Gen	NPAssn		20	10	8	114	724
Hartford, 1,855—Ohio Crowder Clinic.....	Gen	Indiv	7	5	3	43	250
Hazard, 7,397—Perry Hazard Hospital.....	Gen	Corp	80	41	8	92	2,683
Hurst-Snyder Hospital.....	Gen	Corp	25	7	5	54	736
Henderson, 13,160—Henderson Henderson Hospital.....	Gen	Corp	35	28	8	260	1,210
Hopkinsville, 11,724—Christian Jennie Stuart Memorial Hospital.....	Gen	NPAssn	33	27	7	225	1,508
Western State Hospital.....	Ment	State	1,500	1,936	..	..	607
Hyden, 500—Leslie Frontier Nursing Service Hospital.....	Gen	NPAssn	18	13	9	113	549
Jenkins, 9,428—Letcher Jenkins Hospital ¹	Gen	NPAssn	65	27	5	47	929
La Grange, 1,334—Oldham Mallory Taylor Memorial Hospital.....	Gen	NPAssn	24	10	5	69	275
Lakeland, 55—Jefferson Central State Hospital.....	Ment	State	2,400	2,406	..	..	628
Lebanon, 3,786—Marion J. A. Baute Memorial Hosp. Gen	Indiv		20	12	6	174	693
Lexington, 49,304—Fayette Eastern State Hospital.....	Ment	State	2,083	2,026	..	..	491
Good Samaritan Hosp. ¹	Gen	Church	265	215	25	654	7,289
High Oaks Sanatorium.....	N&M	Indiv	30	18	..	..	143
Julius Marks Sanatorium.....	TB	County	116	113	..	..	218
St. Joseph Hospital ¹	Gen	Church	226	160	27	706	5,971
Shriners Hospital for Crippled Children ¹	Orth	NPAssn	25	20	..	..	77
U. S. Public Health Service Hospital ¹	DrugMent	USPHS	1,000	934	..	..	516
Veterans Admin. Facility ¹	Ment	Vet	637	572	..	..	437
London, 2,263—Laurel Pennington General Hospital. Gen	Indiv		25	13	21	5	273
Louisia, 2,023—Lawrence Riverview Hospital.....	Gen	Indiv	12	6	6	76	340
Louisville, 319,077—Jefferson Children's Free Hospital ¹	Chil	NPAssn	68	50	..	..	1,600
Jewish Hospital ¹	Gen	NPAssn	86	79	14	396	2,586
Kentucky Baptist Hosp. ¹	Gen	Church	120	136	30	1,021	5,090
Kosair Crippled Children Hospital ¹	Orth	NPAssn	100	95	..	..	650
Louisville General Hosp. ¹	City		527	353	60	1,159	9,805
Louisville Neuropathic Sanatorium.....	N&M	Corp	24	20	..	..	394
Methodist Deaconess Hosp. ¹	Gen	Church	67	60	8	488	2,547
Norton Memorial Infirmary ¹	Gen	NPAssn	140	123	25	975	4,840
Red Cross Hospital.....	Gen	NPAssn	55	21	6	56	534
St. Anthony's Hospital ¹	Gen	Church	140	121	40	1,135	4,295
St. Joseph Infirmary ¹	Gen	Church	340	274	40	1,400	10,153
SS. Mary and Elizabeth Hospital ¹	Gen	Church	160	125	60	1,717	5,382
State Tuberculosis Sanatorium (Hazelwood).....	TB	State	120	120	..	..	159
Stokes Sanatorium.....	N&M	Indiv	40	21	..	..	134
U. S. Marine Hospital ¹	Gen	USPHS	164	85	..	..	1,502
Lynch, 10,000—Harlan Lynch Hospital.....	Gen	NPAssn	55	31	5	134	1,439
Madisonville, 8,209—Hopkins Hopkins County Hospital... Gen	NPAssn		49	21	5	205	1,207
Mayfield, 8,619—Graves Fuller-Gilliam Hospital.....	Gen	Corp	31	18	4	127	1,064
Mayfield Hospital.....	Gen	NPAssn	40	24	5	93	594
Maysville, 6,572—Mason Haystack Hospital.....	Gen	NPAssn	60	32	10	267	2,403
Middlesboro, 11,777—Bell Middlesboro Hospital.....	Gen	Corp	50	26	8	50	1,120
Morganfield, 3,079—Union Union County Hospital.....	Gen	Indiv	35	10	6	53	329
Murray, 3,773—Calloway Keys-Houston Clinic Hospital Gen	Part		27	14	9	142	858
Wm. Mason Memorial Hosp. ¹ Gen	NPAssn		65	23	5	66	984
Onida, 300—Clay Oneida Maternity Hospital.. Mat	State		25	10	20	266	347
Outwood, 50—Christian Veterans Admin. Facility ¹	TB	Vet	375	323	..	..	783
Owensboro, 30,245—Davies Owensboro-Davies County Hospital ¹	Gen	CyCo	100	65	17	561	3,176
Paducah, 33,765—McCracken Ewart Purcell Isolation Hospital.....	Unit of Riverside Hospital						
Illinois Central Hospital ¹	Indus	NPAssn	95	41	..	..	1,868
Riverside Hospital ¹	Gen	City	103	57	16	652	3,232

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Paintsville, 2,324—Johnson Paintsville Clinic.....	Gen	Indiv	30	7	5	58	390
Paintsville Hospital.....	Gen	Corp	65	35	12	125	1,287
Paris, 6,607—Bourbon W. W. Massie Memorial Hospital ¹	Gen	City	50	18	5	100	611
Pewee Valley, 625—Oldham Pewee Valley Sanitarium and Hospital.....	Gen	NPAssn	33	22	3	37	266
Pikeville, 4,185—Pike Methodist Hospital.....	Gen	Church	90	56	10	206	3,304
Pineville, 3,882—Bell Pineville Community Hosp.. Gen	Corp		60	50	10	125	1,826
Richmond, 7,335—Madison Gibson Hospital.....	Gen	Indiv	25	11	5	50	600
Irvine-McDowell Memorial Trachoma Hospital ¹	Trach	State	38	20	..	..	274
Pattie A. Clay Infirmary.... Gen	NPAssn		49	29	8	137	1,222
Stanford, 1,940—Lincoln Stanford Hospital.....	Gen	Part	10	8	4	52	342
Versailles, 2,548—Woodford Woodford County Memorial Hospital.....	Gen	CyCo	32	16	6	136	631
Waverly Hills, 250—Jefferson Waverly Hills Sanatorium... TB	CyCo		500	456	..	..	415
Winchester, 8,594—Clark Clark County Hospital.....	Gen	NPAssn	50	18	6	91	695
Guerrant Clinic and Hospital Gen	NPAssn		20	7	4	14	210

Related Institutions

Fleming, 1,193—Letcher Fleming Hospital.....	Gen	NPAssn	30	5	2	17	288
Frankford, 11,492—Franklin State Institution for the Feeble-minded.....	MeDe	State	703	733	..	..	27
La Grange, 1,334—Oldham State Reformatory Hospital. Inst	State		139	72	..	..	1,300
Louisville, 319,077—Jefferson King's Daughters Home for Incurables.....	Incur	NPAssn	100	92	..	..	21
Susan Speed Davis Home and Hospital.....	Mat	Church	30	22	22	85	106
Princeton, 5,389—Caldwell Princeton Hospital.....	Gen	City	16	10	3	75	335

LOUISIANA

Hospitals and Sanatoriums

Abbeville, 6,672—Vermilion Abbeville Clinic.....	Gen	Indiv	12	6	3	167	673
Alexandria, 27,006—Rapides Baptist Hospital ¹	Gen	Church	96	72	37	1,058	5,725
Culpepper-White Clinic.....	Gen	Part	12	7	6	87	364
Murrell Hospital-Clinic.....	Gen	Indiv	12	5	2	104	740
Texada Clinic.....	Gen	Part	11	9	4	257	701
Veterans Admin. Facility ¹	GenTb	Vet	623	405	..	..	2,934
Barksdale Field, Bossier Station Hospital ¹	Gen	Army	160	127	8	66	2,599
Bastrop, 6,626—Morehouse Bastrop General Hospital.... Gen	Church		20	10	6	137	748
Baton Rouge, 34,719—East Baton Rouge Baton Rouge General Hosp. ¹ Gen	NPAssn		55	46	16	489	3,407
Our Lady of the Lake Sanitarium ¹	Gen	Church	160	158	44	1,535	8,011
Bogalusa, 14,604—Washington Elizabeth Sullivan Memorial Hospital ¹	Gen	NPAssn	116	68	20	350	4,061
Breaux Bridge, 1,608—St. Martin St. Paul Hospital.....	Gen	Indiv	10	3	2	50	220
Carville, 250—Iberville U. S. Marine Hospital ¹	Lepro	USPHS	454	366	..	..	64
Converse, 314—Sabine Allen Sanitarium.....	Gen	Corp	12	9	4	46	763
Covington, 4,123—St. Tammany Fenwick Sanitarium.....	N&M	Indiv	64	20	..	..	287
Crowley, 9,523—Acadia Acadia Hospital.....	Gen	Part	12	7	3	105	544
Crowley Sanitarium (Legion Memorial Hospital).....	Gen	NPAssn	19	12	5	200	885
Delhi, 1,192—Richland Delhi Clinic and Sanitarium. Gen	Part		9	5	5	134	335
DeRidder, 3,750—Beauregard Frazer Clinic and Hospital.. Gen	Indiv		25	12	5	500	720
Donaldsonville, 3,889—Ascension Donaldsonville General Hosp. Gen	Indiv		10	2	6	45	178
Ferriday, 2,857—Concordia Ferriday Hospital.....	Gen	Part	20	6	5	50	400
Greenwell Springs, 130—East Baton Rouge Greenwell Springs Tuberculosis Hospital.....	TB	State	237	118	..	..	161
Haynesville, 2,418—Claiborne Haynesville Hospital ¹	Gen	Corp	25	6	5	83	532
Hodge, 1,445—Jackson Hodge Clinic.....	Gen	NPAssn	12	2	5	75	663

LOUISIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Houma, 9,032—Terrebonne							
Flender Memorial Hospital.. Gen	Part		23	18	8	358	1,213
U. S. Naval Air Station Dispensary	Gen	Navy	16	...	...	Estab. 1943	
Independence, 1,100—Tangipahoa							
Florida Parishes Charity Hospital	Gen	State	70	56	11	570	2,916
Jackson, 5,584—East Feliciana							
East Louisiana State Hosp.. Ment	State		1,162	4,203	...	...	752
Parker Hospital	Unit of East Louisiana State Hospital						
Lafayette, 19,210—Lafayette							
Lafayette Charity Hospital.. Gen	State		246	128	25	826	5,118
Lafayette Sanitarium	Gen	Corp	25	12	8	158	991
St. Ann Infirmary	Gen	Indiv	12	7	10	168	661
Lake Charles, 21,207—Calcasieu							
St. Patrick's Hospital	Gen	Church	85	61	18	995	3,895
Lecompte, 1,311—Rapides							
Lecompte Sanitarium	Gen	Indiv	11	6	3	108	1,275
Mansfield, 4,035—DeSoto							
Mansfield Sanitarium	Gen	Corp	32	8	2	51	186
Many, 1,474—Sabine							
Fraser Sanitarium	Gen	Indiv	15	8	5	278	600
Minden, 6,677—Webster							
Minden Sanitarium	Gen	Corp	45	26	7	269	1,706
Monroe, 28,309—Ouachita							
E. A. Conway Memorial Hosp. Gen	State		150	125	16	357	1,561
G. B. Cooley Sanitarium	TB	NPAasn	49	37	...	...	38
Monroe Charity Hospital	See E. A. Conway Memorial Hospital						
Riverside Sanitarium	Gen	Indiv	25	10	4	91	737
St. Francis' Sanitarium	Gen	Church	125	101	20	603	4,017
Vaughan-Wright-Bondel Clinic	Gen	Part	25	20	11	179	1,331
New Iberia, 11,747—Iberia							
Dauterive Hospital	Gen	Indiv	26	9	6	275	998
Iberia General Hospital	Gen	Indiv	15	1	4	76	418
New Orleans, 491,537—Orleans							
Charity Hospital of Louisiana	Gen	State	2,273	1,690	107	5,221	26,882
City Hospital for Mental Diseases	Ment	City	100	52	...	...	461
Delgado Memorial Hospital.. Unit of Charity Hospital							
De Paul Sanitarium	N&M	Church	275	250	...	...	537
Eye, Ear, Nose and Throat Hospital	ENT	NPAasn	85	48	...	...	1,422
Flint Goodridge Hospital of Dillard University	Gen	NPAasn	88	75	12	511	3,075
French Hospital	Gen	NPAasn	63	45	12	317	2,050
Hotel Dieu, Sisters' Hosp.	Gen	Church	280	283	45	1,951	11,327
Illinois Central Hospital	Indus	NPAasn	60	50	...	...	961
John Dilbert Memorial Tuberculosis Hospital	Unit of Charity Hospital						
Mercy Hospital-Soulat Memorial	Gen	Church	125	91	32	1,149	5,002
New Orleans Hospital and Dispensary for Women and Children	Gen	NPAasn	61	51	32	715	2,491
Richard Milliken Memorial Hospital	Unit of Charity Hospital						
Southern Baptist Hosp.	Gen	Church	371	371	70	2,326	19,920
Touro Infirmary	Gen	NPAasn	400	361	40	1,766	14,297
U. S. Marine Hospital	Gen	USPHS	572	431	...	...	5,412
U. S. Naval Air Station Dispensary	Gen	Navy	45	20	...	...	1,002
U. S. Naval Hospital	Gen	Navy	925	...	...	Estab. 1913	
Opelousas, 8,980—St. Landry							
St. Landry Clinic	Gen	Corp	21	6	6	212	675
Pineville, 4,207—Rapides							
Central Louisiana State Hospital	Ment	State	2,400	2,235	...	...	447
Tuqua Memorial Hospital	Unit of Central Louisiana State Hospital						
Huey P. Long Charity Hosp. Gen	State		275	176	22	831	6,440
Plaquemine, 5,049—Iberville							
Plaquemine Sanitarium	Gen	NPAasn	35	20	9	225	1,560
Port Sulphur, 550—Plaquemine							
Port Sulphur Hospital	Gen	NPAasn	11	6	3	51	311
Ruston, 7,107—Lincoln							
Ruston-Lincoln Sanitarium	Gen	NPAasn	18	17	6	124	1,019
Shreveport, 98,167—Caddo							
Gilmer Chest Hospital	TB	Indiv	24	15	...	...	66
Gowen Sanitarium	TB	Corp	30	22	...	...	33
Highland Sanitarium	Gen	Corp	100	70	16	295	3,495
North Louisiana Sanit.	Gen	Corp	107	68	14	441	3,856
Pines Sanitarium	TB	NPAasn	110	80	...	...	189
T. L. Schumpert Memorial Sanitarium	Gen	Church	150	105	24	742	4,518
Shreveport Charity Hosp.	Gen	State	726	383	62	1,731	11,116
Sturtevant Hospital for Crippled Children	Orth	NPAasn	60	62	...	...	146
Tri State Hospital	Gen	Corp	125	101	20	430	4,553
Tululah, 5,712—Madison							
Madison Sanitarium	Gen	Indiv	14	7	2	53	385
Thibodaux, 5,851—La Fourche							
St. Joseph Hospital	Gen	NPAasn	40	6	4	175	1,000
Related Institutions							
Alexandria, 27,066—Rapides							
State Colony and Training School	MeDe	State	880	825	...	...	131
Angola, 18—West Feliciana							
Angola General Hospital	Inst	State	125	94	...	...	1,042
New Orleans, 491,637—Orleans							
New Orleans Convalescent Home	Conv	NPAasn	33	11	...	...	166

MAINE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Augusta, 19,360—Kennebec							
Augusta General Hospital .. Gen	NPAasn		69	55	20	493	1,797
Augusta State Hospital	Ment	State	1,633	1,494	...	...	248
Bangor, 29,832—Penobscot							
Bangor Sanitarium	TB	NPAasn	30	17	...	...	27
Bangor State Hospital	Ment	State	937	1,156	...	...	351
Eastern Maine General Hospital	Gen	NPAasn	213	208	30	531	5,506
Paine Private Hospital	Gen	Indiv	30	16	5	3	373
Stinson Private Hospital	Gen	Indiv	21	16	11	158	563
Bar Harbor, 1,378—Hancock							
Mount Desert Island Hosp. .. Gen	NPAasn		58	22	10	106	889
Bath, 10,245—Sagadahoc							
Bath Memorial Hospital	Gen	NPAasn	58	47	12	374	1,456
Bellaire, 5,510—Waldo							
Bradbury Memorial Hospital. Gen	NPAasn		15	6	5	10	102
Waldo County General Hospital	Gen	NPAasn	35	25	10	81	536
Biddeford, 10,790—York							
Trull Hospital	Gen	Corp	48	51	10	246	1,637
Webber Hospital	Gen	NPAasn	60	62	15	334	2,171
Blue Hill, 1,313—Hancock							
Blue Hill Memorial Hospital. Gen	NPAasn		25	8	6	45	185
Boothbay Harbor, 2,121—Lincoln							
St. Andrews Hospital	Gen	Corp	27	11	6	52	449
Brewer, 6,510—Penobscot							
Russell Hospital	Gen	Indiv	13	9	10	184	265
Brunswick, 8,638—Cumberland							
Brunswick Hospital	Gen	Indiv	46	21	12	186	819
Dr. Wilson's Hospital	Gen	Indiv	15	8	10	81	375
U. S. Naval Air Station Dispensary	Gen	Navy	90	...	...	Estab. 1943	
Camden, 3,551—Knox							
Camden Community Hospital Gen	NPAasn		15	11	8	50	480
Cape Cottage, 1,025—Cumberland							
Station Hospital	Gen	Army	54	42	...	...	842
Caribou, 8,218—Aroostook							
Cary Memorial Hospital	Gen	City	40	21	10	170	817
Casco, 800—Cumberland							
U. S. Naval Air Station Dispensary	Gen	Navy	65	...	...	...	...
Castine, 662—Hancock							
Castine Community Hospital Gen	NPAasn		12	9	6	70	450
Damariscotta, 844—Lincoln							
Miles Memorial Hospital	Gen	NPAasn	25	15	7	125	621
Dexter, 3,714—Penobscot							
Plummer Memorial Hospital. Gen	NPAasn		20	8	7	84	302
Dover-Foxcroft, 4,015—Piscataquis							
Mayo Memorial Hospital	Gen	City	20	18	7	104	718
Ellsworth, 3,911—Hancock							
Ellsworth Private Hospital .. Gen	Indiv		16	7	7	68	316
Fairfield, 5,294—Somerset							
Central Maine Sanatorium .. TB	State		208	188	...	...	235
Farmington, 3,743—Franklin							
Franklin County Memorial Hospital	Gen	NPAasn	48	21	10	201	934
Fort Fairfield, 5,607—Aroostook							
Fort Fairfield Clinic	Gen	Corp	20	11	6	89	564
Gardiner, 6,044—Kennebec							
Gardiner General Hospital .. Gen	NPAasn		54	30	16	321	1,284
Greenville Junction, 600—Piscataquis							
Charles A. Dean Memorial Hospital	Gen	NPAasn	27	9	4	48	400
Greenwood Mountain, 250—Oxford							
Western Maine Sanatorium .. TB	State		110	123	...	...	208
Houlton, 7,771—Aroostook							
Aroostook General Hospital .. Gen	NPAasn		40	30	12	157	990
Madigan Memorial Hospital .. Gen	Church		50	32	12	155	1,090
Island Falls, 1,370—Aroostook							
Emma V. Milliken Memorial Hospital	Gen	NPAasn	25	11	5	57	320
Lewiston, 38,598—Androscoggin							
Central Maine General Hospital	Gen	NPAasn	210	184	35	864	4,692
St. Mary's General Hosp.	Gen	Church	150	121	25	691	3,630
Mars Hill, 1,886—Aroostook							
Mars Hill Hospital	Gen	Indiv	7	5	3	40	231
Milo, 3,000—Piscataquis							
McNaughton Hospital	Gen	Indiv	16	9	8	84	492
Old Town, 7,688—Penobscot							
Home Private Hospital	Gen	Corp	16	6	6	100	400
Portland, 73,643—Cumberland							
Children's Hospital	Chil	NPAasn	100	78	...	...	483
Farrington Hospital	Gen	City	168	125	13	30	1,057
Dr. Leighton's Private Hosp. GynOb	Indiv		16	16	12	228	552
Maine Eye and Ear Infirmary	Gen	NPAasn	125	123	31	802	4,999
Maine General Hospital	Gen	NPAasn	335	274	50	1,080	7,886
Mercy Hospital	Gen	Church	134	118	30	488	1,781
State Street Hospital	Gen	Corp	60	60	12	179	3,904
U. S. Marine Hospital	Gen	USPHS	72	63	...	...	611
Presque Isle, 7,939—Aroostook							
Northern Maine Sanatorium. TB	State		125	107	...	...	143
Presque Isle General Hospital Gen	NPAasn		50	35	10	210	1,431
Rockland, 8,899—Knox							
Knox County General Hosp. .. Gen	NPAasn		65	34	7	174	1,352
Rumford, 10,230—Oxford							
Rumford Community Hosp. .. Gen	NPAasn		63	41	12	302	1,618

Key to symbols and abbreviations is on page 855

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Sanford, 14,886—York							
Henrietta D. Goodall Hosp.▲ Gen	NPAssn		42	45	8	292	1,758
Skowhegan, 7,159—Somerset							
Redington Memorial Hospital Gen	NPAssn		30	17	7	120	694
Togus, 2,350—Kennebec							
Veterans Admin. Facility▲... Gen	Vet		305	195	..	...	1,592
▲	Gen	Church	120	88	20	507	5,428
▲	Gen	NPAssn	35	27	8	113	1,159
▲	Gen	NPAssn	20	16	9	110	690
Related Institutions							
Auburn, 19,817—Androscoggin							
Auburn Private Hospital.... Gen	Indiv		20	...	..	Reopened	
Bangor, 29,822—Penobscot							
Gay Private Hospital..... N&M	Indiv		18	12	..	...	146
Eagle Lake, 1,891—Aroostook							
Northern Maine General Hos- pital..... Gen	Church		48	15	2	5	577
Pownal, 575—Cumberland							
Pownal State School..... MeDe	State		1,120	1,072	..	...	76
Union, 1,150—Knox							
Jones Sanitarium..... N&M	Corp		30	14	..	...	29
Van Buren, 5,389—Aroostook							
Hotel Dieu Hospital..... Gen	Church		15	9	5	65	384
Yarmouth, 2,214—Cumberland							
Gilbert Hospital..... Gen	Indiv		12	10	6	24	52
York Village, 1,500—York							
York Hospital..... Gen	NPAssn		22	8	8	119	358

MARYLAND

Hospitals and Sanatoriums

Aberdeen Proving Ground, —Harford							
Station Hospital..... Gen	Army		12	3	..	...	192
Annapolis, 13,069—Anne Arundel							
Annapolis Emergency Hosp.▲ Gen	NPAssn		85	51	19	510	2,230
U. S. Naval Hospital▲..... Gen	Navy		294	140	16	142	3,267
▲	Gen	Navy	1,601	1,042	7	51	11,458
▲	Gen	City	1,225	896	80	1,422	5,152
Baltimore City Tuberculosis Hospital..... Unit of Baltimore City Hospitals							
Baltimore Eye, Ear and Throat Charity Hospital+▲..... ENT	NPAssn		64	38	..	...	3,270
Beck Diagnostic Clinic..... Gen	Indiv		12	10	..	...	200
Bon Secours Hospital+▲..... Gen	Church		158	145	32	948	3,877
Children's Hospital School▲..... Orth	NPAssn		130	88	..	...	320
Church Home and Infirmary+▲..... Gen	Church		165	132	28	745	4,243
Franklin Square Hosp.+▲..... Gen	NPAssn		182	115	50	1,536	4,727
Gundry Sanitarium..... N&M	Indiv		45	42	..	...	19
Hospital for Women+▲..... Gen	NPAssn		124	98	38	1,173	3,527
James Lawrence Kernan Hos- pital and Industrial School for Crippled Children+▲..... Orth	NPAssn		103	67	..	...	182
Johns Hopkins Hospital+▲..... Gen	NPAssn		959	714	75	1,951	17,699
Johnston Memorial Children's Hospital..... Unit of Union Memorial Hospital							
Maryland General Hosp.+▲..... Gen	Church		263	203	26	696	5,217
Mercy Hospital+▲..... Gen	Church		292	251	50	1,372	7,710
Mount Hope Retreat..... N&M	Church		600	578	..	...	127
Phipps Psychiatric Clinic..... Unit of Johns Hopkins Hospital							
Presbyterian Eye, Ear and Throat Charity Hospital..... ENT	Church		40	3	..	...	1,285
Provident Hospital and Free Dispensary+▲..... Gen	NPAssn		145	108	22	687	2,550
St. Agnes' Hospital+▲..... Gen	Church		221	176	50	1,635	5,818
St. Joseph's Hospital+▲..... Gen	Church		256	206	40	1,467	7,676
Sinai Hospital+▲..... Gen	NPAssn		302	230	45	1,430	5,867
South Baltimore General Hos- pital+▲..... Gen	NPAssn		146	127	24	831	4,167
Sydenham Hospital+..... Iso	City		110	41	..	...	959
Union Memorial Hosp.+▲..... Gen	NPAssn		342	280	36	1,011	7,914
U. S. Marine Hospital+▲..... Gen	USPHS		531	422	..	...	5,597
University Hospital+▲..... Gen	State		435	399	50	2,078	10,520
West Baltimore General Hos- pital+▲..... Gen	NPAssn		128	96	23	972	3,530
Bethesda, 20,000—Montgomery							
Naval Hospital (National Naval Medical Center)*..... Gen	Navy		1,732	1,057	..	...	13,193
Suburban Hospital..... Gen	NPAssn		106	...	19	Estab.	1943
Brunswick, 3,856—Frederick							
Schnauffer Hospital..... Gen	Indiv		30	17	5	85	621
Cambridge, 10,102—Dorchester							
Cambridge-Maryland Hosp.▲ Gen	NPAssn		75	40	15	282	1,359
Eastern Shore State Hospital Ment	State		500	461	..	...	167
Catonsville, 7,647—Baltimore							
Haarlem Lodge..... N&M	Indiv		50	43	..	...	155
Spring Grove State Hosp.+... Ment	State		2,183	2,172	..	...	617
Chestertown, 2,700—Kent							
Kent and Upper Queen Anne's General Hospital..... Gen	NPAssn		31	18	12	159	593
Crisfield, 3,908—Somerset							
Edward W. McCready Memo- rial Hospital..... Gen	County		36	12	5	81	477

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Crownsville, 30—Anne Arundel							
Crownsville State Hospital... Ment	State		1,464	1,548	..	...	474
Hospital for Colored Feeble- minded Children..... Unit of Crownsville State Hospital							
Memorial Hospital..... Gen	Church		126	108	43	696	4,020
Easton, 4,528—Talbot							
Memorial Hospital▲..... Gen	NPAssn		140	68	16	280	2,264
Edgewood Arsenal, —Harford							
Station Hospital..... Gen	Army		56	23	..	...	753
Elkton, 3,518—Cecil							
Union Hosp. of Cecil County Gen	NPAssn		52	43	8	402	1,640
Fort George G. Meade, —Anne Arundel							
Station Hospital▲..... Gen	Army		113	68	5	27	1,382
Frederick, 15,802—Frederick							
Emergency Hospital..... Gen	County		50	35	10	199	519
Frederick City Hospital▲..... Gen	NPAssn		125	85	22	500	2,727
Frostburg, 7,659—Allegany							
Miners Hospital..... Gen	State		49	31	10	228	978
Glenn Dale, 205—Prince Georges							
Tuberculosis Sanatorium.... See Washington, D. C.							
Hagerstown, 32,401—Washington							
Washington County Hosp.▲ Gen	NPAssn		142	120	24	898	4,432
Havre de Grace, 4,967—Harford							
Harford Memorial Hospital.. Gen	NPAssn		41	...	No data supplied		
Henryton, 30—Carroll							
Maryland Tuberculosis Sanat. TB	State		495	410	..	...	452
Iamsville, 200—Frederick							
Riggs Cottage Sanitarium... N&M	Indiv		28	25	..	...	29
La Plata, 488—Charles							
Physicians Memorial Hosp... Gen	County		40	13	14	220	491
Laurel, 2,823—Prince Georges							
District Training School..... See Washington, D. C.							
Laurel Sanitarium..... N&M	Indiv		75	72	..	...	325
Warren Hospital..... Gen	Part		14	5	12	152	285
Leonardtown, 668—St. Marys							
St. Mary's Hospital..... Gen	NPAssn		21	18	6	155	750
Mount Wilson, 225—Baltimore							
Mount Wilson Branch, Mary- land Tuberculosis Sanat.... TB	State		210	187	..	...	231
Olney, 100—Montgomery							
Montgomery County General Hospital..... Gen	NPAssn		40	33	14	300	1,463
Perry Point, 80—Cecil							
Veterans Admin. Facility▲... Ment	Vet		1,466	1,368	..	...	635
Prince Frederick, 300—Calvert							
Calvert County Hospital.... Gen	NPAssn		25	14	12	234	546
Reisterstown, 2,000—Baltimore							
Mount Pleasant..... TB	NPAssn		60	59	..	...	48
Relay, 2,016—Baltimore							
Relay Sanitarium..... N&M	Part		35	...	No data supplied		
Riverdale, 2,330—Prince Georges							
Eugene Leland Memorial Hos- pital..... Gen	Corp		60	32	20	479	1,632
Rockville, 2,047—Montgomery							
Chestnut Lodge Sanitarium▲. N&M	Indiv		50	47	..	...	77
Salisbury, 13,313—Wicomico							
Maryland Tuberculosis Sanat., Eastern Shore Branch..... TB	State		78	59	..	...	83
Peninsula General Hospital▲ Gen	NPAssn		177	103	30	691	4,005
Silver Spring, 28,000—Montgomery							
Cedarcroft Sanatorium..... N&M	Part		42	27	..	...	345
State Sanatorium, 200—Frederick							
Maryland Tuberculosis Sanat. TB	State		510	507	..	...	518
Sykesville, 806—Carroll							
Springfield State Hospital+. Ment	State		3,010	2,936	..	...	550
Takoma Park, 8,938—Montgomery							
Walter Reed General Hospital See Washington, D. C.							
Washington Sanit. and Hosp. See Washington, D. C.							
Towson, 2,074—Baltimore							
Aigburth Manor..... Nerv	Indiv		23	21	..	...	65
Hospital for Consumptives (Endwood Sanatorium) .. TB	NPAssn		194	173	..	...	201
Sheppard and Enoch Pratt Hospital+▲..... N&M	NPAssn		285	259	..	...	243
Western Port, 3,565—Allegany							
Reeves Clinic..... Gen	Part		17	7	5	82	493
Related Institutions							
Baltimore, 859,100—Baltimore City							
Baltimore City Jail Hospital Inst	City		24	9	..	...	720
Happy Hills Convalescent Home for Children..... Conv	NPAssn		80	60	..	...	146
Home for Incurables..... Incur	NPAssn		162	152	..	...	23
Maryland Penitentiary Hosp. Inst	State		50	21	..	...	227
Jessup, 400—Anne Arundel							
Maryland House of Corre- ction Hospital..... Inst	State		47	11	..	...	550
Owings Mills, 130—Baltimore							
Rosewood State Training School..... MeDe	State		1,201	1,170	..	...	47
Rockville, 2,047—Montgomery							
Christ Child Farm for Con- valescent Children..... Conv	NPAssn		30	24	..	...	82
Sparrows Point, —Baltimore							
Sparrows Point Hospital.... Indus	NPAssn		24	1	..	...	70

MASSACHUSETTS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Acushnet (New Bedford P.O.), —Bristol							
Acushnet Hospital	Gen	NPAasn	51	10	17	573	1,538
Adams, 12,608—Berkshire							
W. B. Plunkett Memorial Hos- pital	Gen	City	50	21	15	302	1,127
Amesbury, 10,862—Essex							
Amesbury Hospital	Gen	City	30	21	8	157	765
Arlington, 40,013—Middlesex							
Ring Sanatorium and Hosp., N&M	Corp		60	12	..	..	511
Symmes Arlington Hospital	Gen	NPAasn	80	70	20	505	2,736
Attleboro, 22,071—Middlesex							
Bristol County Tuberculosis Hospital	TB	County	60	51	..	..	132
Sturdy Memorial Hospital	Gen	NPAasn	106	67	26	924	2,670
Ayer, 3,572—Middlesex							
Community Memorial Hosp.	Gen	NPAasn	23	15	8	194	530
Baldwinsville, 2,200—Worcester							
Hospital Cottages for Chil- dren	Chil	NPAasn	135	90	..	..	6
Bedford, 3,507—Middlesex							
Veterans Adm'n. Facility	Ment	Vet	1,484	1,467	..	..	326
Belmont, 26,567—Middlesex							
McLenn Hospital	N&M	NPAasn	232	188	..	..	174
Beverly, 25,537—Essex							
Beverly Hospital	Gen	NPAasn	207	122	41	657	3,727
Boston, 770,516—Suffolk							
Adams House (Adams Nervine) Nerv	NPAasn		25	22	..	..	103
Audubon Hospital	Gen	Corp	57	19	5	92	774
Both Israel Hospital	Gen	NPAasn	215	181	..	..	6,314
Boston City Hospital	Gen	City	2,378	1,351	159	2,333	40,314
Boston Floating Hospital	Chil	NPAasn	50	36	..	..	1,164
Boston Lying-In Hosp.	Mut	NPAasn	135	102	125	2,496	3,240
Boston Psychopathic Hospi- tal	Ment	State	110	107	..	..	1,335
Boston State Hospital	Ment	State	2,677	2,575	..	..	1,325
Carney Hospital	Gen	Church	234	186	34	993	5,305
Channing Home	TB	NPAasn	27	26	..	..	40
Children's Hospital	Chil	NPAasn	282	164	..	..	5,826
Doctors Hospital	Gen	Corp	27	20	10	178	917
Erangeline Booth Maternity Hospital and Home	Mut	Church	70	55	60	720	1,164
Faulkner Hospital	Gen	NPAasn	150	129	25	678	4,084
Glenside Hospital	N&M	Corp	112	106	..	..	275
Harley Hospital	Gen	Corp	59	40	21	474	2,012
Haynes Memorial Hospital	Unit of Massachusetts Memorial Hospitals						
House of the Good Samaritan	Card	NPAasn	81	58	..	..	119
Intention Clinic	Maintained by Massachusetts Gen. Hosp.						
Intention Hospital	Unit of Children's Hospital						
Jewish Memorial Hospital	GenChr	NPAasn	82	76	..	..	182
Joseph H. Pratt Diagnostic Hospital	IntMed	NPAasn	52	31	..	..	2,277
Long Island Hospital	GenChr	City	500	502	4	15	1,118
Massachusetts Eye and Ear Infirmary	ENT	NPAasn	227	131	..	..	6,015
Massachusetts General Hospi- tal	Gen	NPAasn	419	404	..	..	7,910
Massachusetts General Hospi- tal, Baker Memorial	Gen	NPAasn	300	261	40	661	6,009
Massachusetts General Hospi- tal, Phillips House	Gen	NPAasn	102	87	22	253	2,277
Massachusetts Memorial Hospi- tals	Gen	NPAasn	414	311	41	1,162	8,395
Massachusetts Women's Hospi- tal	Gen	NPAasn	60	41	22	456	1,445
New England Baptist Hospi- tal	Gen	NPAasn	235	208	..	..	5,697
New England Deaconess Hospi- tal	Gen	Church	310	281	..	..	7,781
New England Hospital for Women and Children	Gen	NPAasn	185	124	75	1,017	4,270
Palmer Memorial Hospital	Unit of New England Deaconess Hospital						
Peter Bent Brigham Hospi- tal	Gen	NPAasn	250	105	..	..	4,883
Robert Breck Brigham Hospi- tal	Gen	NPAasn	108	83	..	..	977
Robert Dawson Evans Memo- rial	Unit of Massachusetts Memorial Hospitals						
St. Elizabeth's Hospital	Gen	Church	256	206	62	1,500	6,323
St. Margaret's Hospital	Gen	Church	110	93	47	1,132	2,915
St. Mary's Lying-In Hospital	MatCh	Church	48	28	28	123	132
Sanatorium Division of Boston City Hospital	TB	City	616	431	..	..	603
U. S. Marine Hospital	Gen	USPHS	336	164	..	..	2,076
Bridgewater, 8,002—Plymouth							
Bridgewater State Hospital	See State Farm, Mass.						
Brookton, 62,343—Plymouth							
Brookton Hospital	Gen	NPAasn	128	75	25	505	2,537
Goddard Hospital	Gen	Corp	63	59	25	712	2,353
Moore Hospital	Gen	Indiv	25	20	8	250	843
Brookline, 40,786—Norfolk							
Allerton Hospital	Gen	Corp	50	48	20	478	2,024
Bellevue Hospital	Gen	NPAasn	30	15	6	75	838
Board of Health Hospital	Tbiso	City	55	15	..	..	45
Bourne Wood Hospital	N&M	Indiv	14	9	..	..	1
Brooks Hospital	Gen	NPAasn	52	45	..	..	1,547
Corey Hill Hospital	Gen	Corp	60	30	..	..	1,163
Free Hospital for Women	Gyn	NPAasn	101	70	..	..	2,453
Parkway Hospital	Unit of Free Hospital for Women						
Cambridge, 110,879—Middlesex							
Cambridge City Hospital	Gen	City	300	198	100	1,729	6,418
Cambridge Hospital	Gen	NPAasn	221	176	51	1,350	5,708

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Cambridge Sanatorium	TB	City	96	79	..	..	106
Charlesgate Hospital	Gen	Corp	85	58	15	..	2,260
Chester Hospital	Gen	Corp	40	26	20	..	979
Canton, 6,381—Norfolk							
Massachusetts Hosp. School	Orth	State	265	208	..	..	229
Chelsea, 41,259—Suffolk							
Captain John Adams Hospital at Soldiers' Home	Inst	State	237	200	..	..	2,493
Chelsea Memorial Hosp.	Gen	NPAasn	90	71	25	..	2,468
U. S. Naval Hospital	Gen	Navy	1,550	949	34	..	13,824
Clinton, 12,440—Worcester							
Clinton Hospital	Gen	NPAasn	63	41	20	..	1,524
Concord, 7,072—Middlesex							
Emerson Hospital	Gen	NPAasn	37	27	18	..	1,254
Danvers, 11,179—Essex							
Danvers State Hospital	See Hathorne						
Hunt Memorial Hospital	Gen	City	20	10	6	..	3-9
Everett, 16,784—Middlesex							
Whidden Memorial Hosp.	Gen	NPAasn	95	80	20	..	3,202
Fall River, 115,428—Bristol							
Fall River General Hospital	GenTb	City	274	205	..	..	1,058
St. Anne's Hospital	Gen	Church	100	87	33	..	3,224
Truesdale Hospital	Gen	NPAasn	151	113	23	..	3,897
Union Hospital	Gen	NPAasn	151	120	35	..	3,820
Uitchburg, 41,824—Worcester							
Burbank Hospital	Gen	NPAasn	203	150	42	..	4,107
Lucy Helen Memorial Hosp.	Unit of Burbank Hospital						
Fort Devens, —Middlesex							
Station Hospital	Gen	Army	99	71	..	..	1,551
Foxboro, 6,503—Norfolk							
Foxboro State Hospital	Ment	State	1,310	1,303	..	..	264
Framingham, 23,214—Middlesex							
Framingham Union Hosp.	Gen	NPAasn	108	77	30	..	2,988
Gardner, 20,204—Worcester							
Gardner State Hospital	Ment	State	1,401	1,400	..	..	149
Henry Heywood Memorial Hos- pital	Gen	NPAasn	93	78	33	..	2,797
Georgetown, 1,904—Essex							
Baldpate	N&M	Corp	46	35	..	..	244
Gloucester, 21,016—Essex							
Addison Gilbert Hospital	Gen	NPAasn	85	73	15	..	1,989
Great Barrington, 5,824—Berkshire							
Fairview Hospital	Gen	NPAasn	56	26	12	..	963
Greenfield, 15,672—Franklin							
Franklin County Public Hos- pital	Gen	NPAasn	87	86	21	..	2,330
Hanson, 2,570—Plymouth							
Plymouth County Hospital	TB	County	140	70	..	..	73
Hathorne, 146—Essex							
Danvers State Hospital	Ment	State	2,376	2,289	..	..	769
Haverhill, 46,753—Essex							
Benson Hospital	Gen	Indiv	35	22	17	..	809
Haverhill Municipal Hospitals (Hale)	Gen	City	170	85	28	..	4,460
Haydenville, 1,000—Hampshire							
Hampshire County Sanat.	TB	County	60	46	..	..	48
Holden, 3,924—Worcester							
Holden District Hospital	Gen	NPAasn	32	27	6	..	1,130
Holyoke, 33,750—Hampden							
Holyoke Hospital	Gen	NPAasn	131	112	24	..	3,030
Providence Hospital	Gen	Church	168	156	32	..	4,130
Hyannis, 1,800—Barnstable							
Cape Cod Hospital	Gen	NPAasn	65	49	15	..	1,780
Ipswich, 6,348—Essex							
Benjamin Stickney Cable Me- morial Hospital	Gen	NPAasn	23	18	7	..	771
Lawrence, 81,323—Essex							
Bessie Burke Memorial Hosp.	Gen	City	110	75	15	..	972
Clover Hill Hospital	Gen	Corp	60	46	24	..	1,891
Lawrence General Hosp.	Gen	NPAasn	183	134	42	..	5,122
Leominster, 22,226—Worcester							
Leominster Hospital	Gen	NPAasn	88	49	22	..	2,171
Lowell, 101,389—Middlesex							
Lowell General Hospital	Gen	NPAasn	158	96	30	..	3,017
St. John's Hospital	Gen	Church	200	151	25	..	4,419
St. Joseph's Hospital	Gen	Church	145	109	30	..	3,893
Shaw Hospital	Gen	Indiv	20	9	10	..	269
Ludlow, 8,181—Hampden							
Ludlow Hospital	Gen	NPAasn	30	27	14	..	1,007
Lynn, 98,123—Essex							
Lynn Hospital	Gen	NPAasn	242	170	74	..	6,706
Union Hospital	Gen	NPAasn	56	31	25	..	1,453
Malden, 58,010—Middlesex							
Malden Hospital	Gen	NPAasn	231	130	40	..	5,299
Marblehead, 10,856—Essex							
Mary A. Alley Emergency Hospital	Gen	City	18	10	10	..	361
Marlboro, 15,154—Middlesex							
Marlborough Hospital	Gen	NPAasn	63	48	22	..	1,945
Medfield, 4,384—Norfolk							
Medfield State Hospital	Ment	State	1,859	1,781	..	..	278
Medford, 63,083—Middlesex							
Lawrence Memorial Hosp.	Gen	NPAasn	76	65	34	..	2,687
Melrose, 25,333—Middlesex							
Melrose Hospital	Gen	NPAasn	100	78	25	..	3,114
New England Sanitarium and Hospital	Gen	Church	141	134	17	..	2,950

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Methuen, 21,850—Essex							
Mary E. McGowan Memorial Hospital.....	Gen	Corp	28	24	9	439	897
Middleboro, 9,032—Plymouth							
Middleboro State Sanatorium..	TB	State	302	183	..	..	171
Lakeville State Sanatorium..	TB	State	302	183	..	..	171
St. Luke's Hospital.....	Gen	NPAasn	32	20	15	217	773
Middleton, 2,345—Essex							
Essex County Tuberculosis Hospital.....	TB	County	360	310	..	..	350
Milford, 15,388—Worcester							
Milford Hospital..	Gen	Corp	61	49	15	632	2,364
Milton, 18,708—Norfolk							
Milton Hospital and Convalescent Home..	Gen	NPAasn	25	12	6	116	537
Montague City, 635—Franklin							
Farren Memorial Hospital..	Gen	Church	74	52	12	223	1,631
Natick, 13,551—Middlesex							
Leonard Morse Hospital....	Gen	City	61	50	14	399	1,512
Needham, 12,445—Norfolk							
Glover Memorial Hospital....	Gen	City	22	19	10	116	664
New Bedford, 10,331—Bristol							
St. Luke's Hospital*..	Gen	NPAasn	294	180	45	1,500	6,144
Sassaquin Sanatorium*.....	TB	NPAasn	124	111	..	..	112
Union Hospital.....	Gen	Corp	32	28	..	..	900
Newburyport, 13,916—Essex							
Anna Jaques Hospital.....	Gen	NPAasn	52	33	10	252	1,151
Worcester Memorial Hosp..	Gen	NPAasn	24	15	5	130	558
Newton, 69,873—Middlesex							
New England Peabody Home for Crippled Children*..	Orth	NPAasn	100	75	..	..	18
Newton Hospital*.....	GenIso	NPAasn	234	108	52	1,056	5,424
Norfolk, 2,294—Norfolk							
State Prison Colony Hosp..	Inst	State	75	37	..	..	447
North Adams, 22,213—Berkshire							
North Adams Hospital*.....	Gen	NPAasn	91	58	10	413	1,872
Northampton, 24,794—Hampshire							
Cooley Dickinson Hospital*..	Gen	NPAasn	126	103	24	717	4,663
Northampton State Hosp.*..	Ment	State	2,189	2,133	..	..	680
Veterans Admin. Facility*....	Ment	Vet	769	798	..	..	291
North Grafton, 1,150—Worcester							
Grafton State Hospital*....	Ment	State	1,730	1,679	..	..	225
North Wilmington, 472—Middlesex							
North Reading State Sanat.*	TB	State	297	127	..	..	99
Norwood, 15,383—Norfolk							
Norwood Hospital*.....	Gen	NPAasn	135	100	30	841	3,744
Oak Bluffs, 1,584—Dukes							
Martha's Vineyard Hospital*..	Gen	NPAasn	29	15	10	75	449
Palmer, 9,149—Hampden							
Monson State Hospital*....	Epl	State	1,665	1,432	..	..	125
Wing Memorial Hospital*....	Gen	NPAasn	32	22	8	188	1,228
Peabody, 21,711—Essex							
Josiah B. Thomas Hospital..	Gen	City	65	33	15	273	1,203
Pittsfield, 49,684—Berkshire							
Hillcrest Hospital.....	Gen	NPAasn	42	43	10	169	1,052
House of Mercy Hospital*..	Gen	NPAasn	202	151	33	665	4,446
St. Luke's Hospital*.....	Gen	Church	156	120	44	630	2,977
Plymouth, 13,100—Plymouth							
Jordan Hospital*.....	Gen	NPAasn	75	37	10	330	1,226
Pocasset, 365—Barnstable							
Barnstable County Sanat....	GenTb	County	70	63	..	..	288
Quincy, 75,810—Norfolk							
Quincy City Hospital*.....	Gen	City	312	214	60	1,674	9,332
Rutland, 2,181—Worcester							
Jewish Tuberculosis Sanat....	TB	NPAasn	30	25	..	..	23
Rutland State Sanatorium*..	TB	State	360	256	..	..	250
Rutland Heights, 800—Worcester							
Veterans Admin. Facility*....	GenTb	Vet	469	406	..	..	1,554
Salem, 41,213—Essex							
North Shore Babies' Hosp.*..	Chil	NPAasn	50	19	..	..	579
Salem Hospital*.....	Gen	NPAasn	236	180	49	956	5,168
Sharon, 3,737—Norfolk							
Sharon Sanatorium.....	Chil	NPAasn	44	34	..	..	53
Somerville, 102,177—Middlesex							
Somerville Hospital*.....	Gen	NPAasn	118	90	30	856	3,290
South Braintree, —Norfolk							
Norfolk County Hospital*..	TB	County	168	136	..	..	90
Southbridge, 16,825—Worcester							
Harrington Memorial Hosp.*	Gen	NPAasn	40	30	12	380	1,100
South Dartmouth, 1,815—Bristol							
Sol-e-Mar Orthopedic Hospital for Children.....	Orth	NPAasn	40	30	..	..	25
Springfield, 149,554—Hampden							
Health Department Hospital*..	TbIso	City	100	56	..	..	1,025
Mercy Hospital*.....	Gen	Church	315	258	60	1,829	8,089
Shriners Hospital for Crippled Children*.....	Orth	NPAasn	60	40	..	..	244
Springfield Hospital*.....	Gen	NPAasn	281	239	4	6	6,695
Wesson Maternity Hospital*..	Mat	NPAasn	62	61	66	2,105	2,284
Wesson Memorial Hospital*..	Gen	NPAasn	112	77	..	..	2,898
State Farm, 200—Plymouth							
Bridgewater State Hospital..	Ment	State	902	877	..	..	64
Stockbridge, 1,815—Berkshire							
Austen Riggs Foundation....	Nerv	NPAasn	30	18	..	..	139
Taunton, 37,395—Bristol							
Morton Hospital*.....	Gen	NPAasn	90	66	40	572	3,577
Taunton State Hospital*.....	Ment	State	1,839	1,873	..	..	530
Tewksbury, 6,261—Middlesex							
Tewksbury State Hospital and Infirmary*.....	Gen	State	3,425	2,191	40	66	1,704
Vineyard Haven, 1,500—Dukes							
U. S. Marine Hospital.....	Gen	USPHS	24	15	..	..	117

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Walpole, 7,443—Norfolk							
Pondville Hospital*.....	Cancer	State	143	52	..	..	862
Waltham, 40,020—Middlesex							
Metropolitan State Hospital*..	Ment	State	1,996	1,810	..	..	186
Middlesex County Sanat.*..	TB	County	380	269	..	..	278
Waltham Contagious Hosp..	Unit of	Waltham Hospital	162	92	53	746	3,402
Waltham Hospital*.....	Gen	NPAasn	162	92	53	746	3,402
Ware, 7,557—Hampshire							
Mary Lane Hospital*.....	Gen	NPAasn	42	37	18	455	1,148
Wareham, 6,364—Plymouth							
Tobey Hospital.....	Gen	NPAasn	40	34	18	304	1,401
Webster, 13,186—Worcester							
Webster District Hospital*..	Gen	NPAasn	30	21	12	397	714
Wellesley, 15,127—Norfolk							
..... N&M Corp			35	26	..	..	50
..... N&M Indiv			35	24	..	..	28
Westboro State Hospital*..	Ment	State	1,737	1,711	..	..	440
Westfield, 18,793—Hampden							
Noble Hospital.....	Gen	NPAasn	85	43	15	415	1,727
Westfield State Sanatorium*..	TB	State	239	178	..	..	581
Westwood, 3,376—Norfolk							
Westwood Lodge.....	N&M	Corp	21	12	..	..	31
Weymouth, 23,668—Norfolk							
Weymouth Hospital*.....	Gen	NPAasn	70	66	38	845	2,953
Whitinsville, 7,000—Worcester							
Whitinsville Hospital.....	Gen	NPAasn	17	15	12	180	725
Winchendon, 6,575—Worcester							
Millers River Hospital.....	Gen	NPAasn	26	17	8	114	605
Winchester, 15,081—Middlesex							
Winchester Hospital*.....	Gen	NPAasn	70	56	20	635	2,161
Winthrop, 16,768—Suffolk							
Station Hospital*.....	Gen	Army	118	68	6	59	432
Winthrop Community Hosp.*	Gen	NPAasn	44	44	20	685	1,782
Woburn, 19,751—Middlesex							
Charles Choate Memorial Hospital*..	Gen	NPAasn	52	36	23	444	1,058
Worcester, 193,694—Worcester							
Belmont Hospital*.....	TbIso	City	250	130	..	..	955
Fairlawn Hospital*.....	Gen	NPAasn	50	45	18	373	1,683
Harvard Private Hospital....	Gen	Corp	25	10	5	37	342
Memorial Hospital*.....	Gen	NPAasn	185	156	30	766	6,280
St. Vincent Hospital*.....	Gen	Church	280	243	33	718	6,064
Worcester City Hospital*..	Gen	City	480	341	70	1,185	9,892
Worcester County Sanat.*..	TB	County	130	91	..	..	78
Worcester Hahnemann Hospital*..	Gen	NPAasn	114	105	37	956	3,372
Worcester State Hospital*..	Ment	State	2,750	2,608	..	..	757
Related Institutions							
Andover, 11,122—Essex							
Isham Infirmary.....	Inst	NPAasn	50	17	..	..	998
Belchertown, 3,503—Hampshire							
Belchertown State School....	MeDe	State	1,315	1,286	..	..	60
Boston, 770,816—Suffolk							
Bay State Hospital.....	Gen	Corp	20	10	6	56	690
Boston Home for Incurables..	Incur	NPAasn	56	54	..	..	11
Deer Island Hospital, Suffolk							
County House of Correction	Inst	CyCo	35	14	..	..	212
Florence Crittenton Home and Hospital.....	Mat	NPAasn	54	34	47	97	121
New England Home for Little Wanderers.....	Inst	NPAasn	46	16	6	..	559
Prendergast Preventorium....	TB	NPAasn	120	48	..	..	220
Riverbank Hospital.....	Gen	Indiv	20	4	4	2	100
Talitha Cumi Home.....	Mat	NPAasn	34	26	18	70	92
Dr. Taylor's Private Hospital	Drug	Indiv	18	4	..	..	182
Washingtonian Hospital.....	Alcoh	NPAasn	35	28	..	..	1,056
Cambridge, 110,879—Middlesex							
Holy Ghost Hospital for Incurables.....	Incur	Church	215	208	..	..	142
Framingham, 23,214—Middlesex							
Woodside Cottages.....	N&M	Corp	21	19	..	..	80
Greenfield, 15,672—Franklin							
Greenfield Isolation Hospital..	TbIso	City	20	4	..	..	123
Haverhill, 46,752—Essex							
Haverhill City Infirmary.....	Chr	City	70	69	..	..	108
Holbrook, 3,330—Norfolk							
Elmhurst Hospital and Sanit.	Conv	Indiv	18	8	..	..	165
Lowell, 101,359—Middlesex							
Lowell Isolation Hospital....	TbIso	City	90	..	No data supplied	..	..
Lynn, 98,123—Essex							
Lynn Health Department Hospital.....	Iso	City	75	9	..	..	147
Pittsfield, 49,684—Berkshire							
Pittsfield Anti-Tuberculosis Hospital.....	TB	NPAasn	14	8	..	..	19
Quincy, 75,810—Norfolk							
Wellington Hospital Home....	Conv	Corp	27	25	..	..	20
Salem, 41,213—Essex							
Health Department Hospital for Communicable Diseases..	Iso	City	60	5	..	..	100
Somerville, 102,177—Middlesex							
Somerville Contagious Disease Hospital.....	Iso	City	20	12	..	..	220
Springfield, 149,554—Hampden							
Buseall Nursing Home.....	Conv	Indiv	25	16	..	..	31
City of Springfield Infirmary..	Inst	City	126	91	..	..	274

MASSACHUSETTS—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Waltham, 40,020—Middlesex							
Walter L. Fernald State School McDe	State		1,510	1,050	..	...	29
Wellesley, 15,127—Norfolk							
Convalescent Home of the Child-							
ren's Hospital	Orth	NPAasn	75	56	..	...	355
Simpson Infirmary of Welles-							
ley College	Inst	NPAasn	27	17	..	...	788
West Concord, 3,500—Middlesex							
Massachusetts Reformatory							
Hospital	Inst	State	35	1	..	...	168
Williamstown, 4,291—Berkshire							
Williams College Infirmary...	Inst	NPAasn	28	6	..	...	423
Wrentham, 1,674—Norfolk							
Wrentham State School.....	MeDe	State	2,075	1,650	..	...	210

MICHIGAN

Hospitals and Sanatoriums

Adrian, 11,200—Lenawee							
Emma L. Bixby Hospital....	Gen	City	75	50	25	615	1,516
Lenawee County Tuberculosis							
Sanatorium	TB	County	50	26	..	...	12
Ablon, 8,345—Calhoun							
James W. Sheldon Memorial							
Hospital	Gen	City	11	21	10	285	1,112
Allegan, 4,526—Allegan							
Allegan Health Center.....	Gen	NPAasn	35	21	13	283	1,136
Alma, 7,202—Grand							
Carney-Wilcox-Miller Hosp....	Gen	NPAasn	33	13	6	160	641
R. B. Smith Memorial Hosp..	Gen	NPAasn	27	15	8	231	1,136
Almont, 924—Lapeer							
Bishop Hospital	Gen	Indiv	14	11	5	141	393
Alpena, 12,408—Alpena							
Alpena General Hospital.....	Gen	City	75	50	15	444	1,809
Ann Arbor, 29,815—Washtenaw							
Mercywood Neuropsychiatric							
Hospital	N&M	Church	10	20	..	...	233
St. Joseph's Mercy Hosp.*+AO	Gen	Church	250	200	56	1,118	6,902
State Psychopathic Hospital, Unit of	Univ	City	916	731	25	448	15,882
University Hospital*+AO	Gen	State					
Bad Axe, 2,624—Huron							
Hubbard Memorial Hospital, Gen	NPAasn		50	25	10	191	935
Battle Creek, 13,453—Calhoun							
American Legion Hospital*+..	TB	NPAasn	350	151	..	...	108
Arthur S. Kimball Sanat.....	TB	County	75	62	..	...	62
Battle Creek Sanitarium.....	Gen	NPAasn	300	112	..	...	2,214
Community Hospital*+AO	Gen	NPAasn	100	86	25	1,004	5,018
ella Y. Post Montgomery							
Hospital*+AO	Gen	Church	115	124	20	652	6,301
y City, 47,956—Bay							
Bay City General Hospital*+..	Gen	City	65	61	25	853	2,667
Bay City Samaritan Hospital Gen	NPAasn		41	29	4	41	1,280
Mercy Hospital*+AO	Gen	Church	135	120	28	901	4,523
Benton Harbor, 16,668—Berrien							
Mercy Hospital*+AO	Gen	NPAasn	100	74	26	680	2,826
Berrien Center, 241—Berrien							
Berrien County Hospital.....	Gen	County	60	52	5	11	572
Big Rapids, 4,987—Mecosta							
Community Hospital	Gen	City	33	23	10	164	832
Brighton, 1,553—Livingston							
Mellus Hospital	Gen	NPAasn	12	8	4	127	377
Cadillac, 9,555—Wexford							
Mercy Hospital*+AO	Gen	Church	51	12	16	311	2,025
Calumet, 1,460—Houghton							
Calumet and Hecla Hospital, Indus	NPAasn		21	7	..	...	438
Caro, 3,670—Tuscola							
Caro Community Hospital.. Gen	City		16	10	0	160	422
Caro State Hospital for Epi-							
leptics	Epi	State	1,468	1,391	..	...	122
Cass City, 1,362—Tuscola							
Pleasant Home Hospital....	Gen	Indiv	15	8	4	189	1,095
Charlevoix, 2,200—Charlevoix							
Charlevoix Hospital	Gen	NPAasn	27	15	8	131	511
Charlotte, 5,544—Eaton							
Hayes-Green-Bench County Me-							
morial Hospital	Gen	County	23	11	8	289	817
Cheboygan, 5,673—Cheboygan							
Community Memorial Hosp.. Gen	NPAasn		25	17	6	141	942
Clare, 1,844—Clare							
Clare Hospital and Olinle....	Gen	Part	25	11	6	38	349
Coldwater, 7,343—Branch							
Community Health Center... Gen	County		56	26	11	350	1,357
Crystal Falls, 2,611—Iron							
Crystal Falls Municipal Hos-							
pital	Gen	City	17	10	5	76	345
Cutlerville (Grand Rapids P.O.), 500—Kent							
Pine Rest Sanitarium.....	Unit of Christian Psychopathic Hospital, Grand Rapids						
Dearborn, 63,584—Wayne							
Dearborn Clinic and Diagnos-							
tic Hospital	Gen	NPAasn	60	12	30	177	375
Dearborn General Hospital... Gen	Indiv		17	12	14	420	607
Dearborn Industrial and Gen-							
eral Hospital	Gen	NPAasn	28	21	8	305	1,281
St. Joseph's Retreat*+AO	N&M	Church	350	344	..	...	694
Veterans Admin. Facility*+AO	Gen	Vet	360	339	..	...	2,508
Detroit, 1,623,452—Wayne							
Alexander Blain Hospital*+AO	Gen	NPAasn	60	56	5	81	2,307
Bethesda Hospital	TB	NPAasn	83	55	..	...	80
Charles Godwin Jennings Hos-							
pital*+AO	Gen	NPAasn	83	59	25	327	2,304

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Chenik Hospital*+AO	Mat	NPAasn	52	30	25	254	268
Children's Hospital*+AO	Chil	NPAasn	230	153	..	...	5,066
City of Detroit Receiving							
Hospital*+AO	Gen	City	606	694	4	12	17,516
City of Detroit Receiving Hos-							
pital (Redford Branch)*+AO	Gen	City	50	31	..	...	1,454
Delray General Hospital*+AO	Gen	NPAasn	78	69	22	...	3,052
Detroit Tuberculosis Sanat.*+AO	TB	NPAasn	200	163	..	...	815
East Side General Hospital*+AO	Gen	NPAasn	87	72	45	1,621	4,153
Edyth K. Thomas Memorial							
Hospital	Gen	NPAasn	136	30	17	169	963
Evangelical Deaconess Hos-							
pital*+AO	Gen	Church	175	144	46	1,731	7,440
Fairview Sanatorium	TB	NPAasn	66	60	..	...	133
Florence Crittenton Hosp.*+AO	Gen	NPAasn	165	113	105	2,174	6,776
Good Samaritan Hospital... TB	NPAasn		29	16	..	...	83
Grace Hospital*+AO	Gen	NPAasn	487	454	83	2,598	15,822
Grace Hospital, Northwestern							
Branch*+AO	Gen	NPAasn	182	142	60	1,834	7,241
Harper Hospital*+AO	Gen	NPAasn	600	410	85	2,350	19,196
Henry Ford Hospital*+AO	Gen	NPAasn	500	480	55	1,672	16,444
Herman Kiefer Hosp.*+AO...ThMatIso	City		1,196	855	63	883	4,950
Kretschmar Diagnostic Clinic							
and Hospital	Gen	NPAasn	12	10	4	70	363
Lincoln Hospital*+AO	Gen	NPAasn	60	49	26	781	2,455
Marr General Hospital.....	Gen	NPAasn	43	29	18	585	2,080
Martin Place Hospital.....	Gen	NPAasn	14	7	4	36	333
McGregor Health Foundation Conv	NPAasn		48	30	..	...	375
Mercy Hall Cancer Hospital... Cancer	NPAasn		40	25	..	...	180
Michigan Mutual Hospital*+AO	Indus	NPAasn	49	25	..	...	1,105
Miriam Memorial Hospital... Unit of Grace Hospital							
Mt. Carmel Mercy Hosp.*+AO	Gen	Church	515	403	100	4,302	19,267
Parkside Hospital*+AO	Gen	NPAasn	52	43	12	457	1,575
Providence Hospital*+AO	Gen	Church	349	335	100	3,657	13,375
St. Aubin General Hospital... Gen	Indiv		48	10	5	100	350
St. Joseph's Mercy Hosp.*+AO	Gen	Church	225	149	60	2,026	9,656
St. Mary's Hospital*+AO	Gen	Church	315	234	60	1,927	10,264
Saratoga General Hospital*+AO	Gen	NPAasn	100	83	38	1,374	5,038
Shurly Hospital*+AO	Gen	Indiv	85	44	1	18	1,295
Station Hospital	Gen	Army	60	44	..	...	513
Trinity Hospital*+AO	Gen	NPAasn	110	51	22	317	1,560
U. S. Marine Hospital*+AO	USPHS		291	169	..	...	2,381
Warren Diagnostic Hospital, Gen	Indiv		18	13	3	41	537
Wayne Diagnostic Hospital... Gen	NPAasn		45	36	20	780	1,059
William Booth Memorial Hos-							
pital	Mat	Church	35	25	43	988	1,131
Woman's Hospital*+AO	Gen	NPAasn	240	173	109	2,931	7,219
Dowagiac, 5,007—Cass							
Lee Memorial Hospital.....	Gen	Church	27	15	8	189	833
Durand, 3,127—Shiawassee							
Durand Hospital	Gen	NPAasn	14	11	5	165	476
East Grand Rapids (Reeds Lake P.O.), 4,890—Kent							
Burleson Hospital	Proct	Corp	19	14	..	...	633
Eaton Rapids, 3,000—Eaton							
Stimson Hospital	Gen	NPAasn	12	5	5	92	262
Edmore, 825—Montcalm							
Edmore Hospital	Gen	Indiv	20	8	5	96	330
Eloise, 1,700—Wayne							
Eloise Hospital and In- (J+AO) Ment	County		3,768	3,948	..	...	4,520
firmary	(J+AO) GenChr	County	6,432	2,927	..	7	7,095
William J. Seymour Hosp.*+AO Unit of Eloise Hospital and Infirmary							
Escanaba, 14,830—Delta							
St. Francis Hospital.....	Gen	Church	100	77	22	487	2,619
Flint, 151,513—Genesee							
Hurley Hospital*+AO	Gen	City	373	296	59	2,135	12,209
St. Joseph Hospital*+AO	Gen	Church	228	178	60	1,922	6,619
Women's Hospital*+AO	Gen	NPAasn	40	35	25	756	1,343
Fort Custer, —Calhoun							
Veterans Admin. Facility*+AO	Ment	Vet	1,273	1,338	..	...	882
Fremont, 2,520—Newaygo							
Gerber Memorial Hospital....	Gen	City	23	13	12	196	637
Gaylord, 2,055—Otsego							
Northern Michigan Tuberculo-							
sis Sanatorium*+AO	TB	State	128	124	..	...	123
Gladwin, 1,600—Gladwin							
Gladwin Hospital	Gen	Indiv	12	7	4	144	364
Goodrich, 470—Genesee							
Goodrich General Hospital*+AO	Gen	NPAasn	35	18	15	171	1,434
Grand Haven, 8,799—Ottawa							
Grand Haven Municipal Hos-							
pital	Gen	City	47	28	14	351	1,190
Grand Rapids, 164,292—Kent							
Blodgett Memorial Hosp.*+AO	Gen	NPAasn	166	124	40	824	4,300
Butterworth Hospital*+AO ..	Gen	NPAasn	224	197	48	1,649	7,674
Christian Psychopathic Hos-							
pital	N&M	NPAasn	340	326	..	...	303
City General Hospital.....	Gen	City	35	14	..	...	202
Ferguson-Droste-Ferguson San-							
itarium	Proct	Corp	50	34	..	...	1,402
Pine Rest Sanitarium.....	Unit of Christian Psychopathic Hospital						
St. Mary's Hospital*+AO	Gen	Church	225	206	56	1,635	7,566
Sunshine Sanatorium	TB	County	145	110	..	...	138
Grayling, 2,124—Crawford							
Mercy Hospital*+AO	Gen	Church	45	21	5	91	867
Greenville, 5,321—Montcalm							
United Memorial Hospital....	Gen	NPAasn	30	17	6	188	728
Grosse Ile, 2,000—Wayne							
U. S. Naval Air Station Dis-							
pensary	Gen	Navy	105	...	..	Estab.	1943

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Grosse Pointe, 6,170—Wayne							
Bon Secours Hospital.....	Gen	Church	36	32	..	...	145
Grosse Pointe Farms, 7,217—Wayne							
Cottage Hospital.....	Gen	NPAasn	45	32	13	507	2,083
Hamtramck, 49,833—Wayne							
St. Francis Hospital.....	Gen	Church	100	85	42	1,259	3,907
Hancock, 5,554—Houghton							
St. Joseph's Hospital.....	Gen	Church	85	56	15	321	1,633
Hart, 1,922—Oceana							
Oceana Hospital.....	Gen	NPAasn	20	15	7	128	838
Hartford, 1,694—Van Buren							
Van Buren County Hospital.....	Inst	County	31	25	3	14	250
Hastings, 5,175—Barry							
Pennock Hospital.....	Gen	NPAasn	35	30	8	394	1,364
Hazel Park, —Oakland							
Helene Meinke Hospital.....	Gen	Indiv	14	6	8	173	474
Highland Park, 50,810—Wayne							
Highland Park General Hospital.....	Gen	City	180	181	45	1,630	7,050
Hillsdale, 6,381—Hillsdale							
Hillsdale Community Health Center.....	Gen	City	65	37	20	401	1,793
Holland, 14,616—Ottawa							
Holland City Hospital.....	Gen	City	55	39	15	549	1,786
Houghton, 3,633—Houghton							
Copper County Sanatorium.....	TB	County	66	63	..	...	44
Howell, 3,748—Livingston							
McPherson Memorial Hosp... Gen		City	25	8	8	224	480
Michigan State Sanatorium.....	TB	State	444	427	..	...	371
Ionia, 6,392—Ionia							
Ionia County Memorial Hospital.....	Gen	City	20	...	9	Estab.	1943
Ionia State Hospital.....	Ment	State	1,025	1,016	..	...	117
Iron Mountain, 11,680—Dickinson							
Iron Mountain General Hosp. Gen		NPAasn	28	23	8	229	982
Ironwood, 13,363—Gogebic							
Grand View Hospital.....	Gen	Tb	120	89	13	263	2,078
Newport Hospital.....	Gen	NPAasn	13	8	6	149	460
Ishpeming, 8,491—Marquette							
Ishpeming Hospital.....	Gen	NPAasn	63	45	12	397	1,117
Jackson, 49,656—Jackson							
W. A. Foote Memorial Hospital.....	Gen	City	145	146	30	918	5,740
Jackson County Sanatorium.....	TB	County	71	69	..	...	56
Mercy Hospital.....	Gen	Church	125	104	25	1,064	4,779
Kalamazoo, 54,067—Kalamazoo							
Borgess Hospital.....	Gen	Church	246	167	25	1,115	6,194
Bronson Methodist Hosp. Gen		Church	140	134	30	1,076	4,769
Fairmount Hospital.....	Tb	Gen	72	55	..	...	50
Kalamazoo State Hospital.....	Ment	State	3,378	3,317	..	...	1,167
Lakerview, 824—Montcalm							
Kelsey Hospital.....	Gen	Part	20	9	4	122	514
Lansing, 78,753—Ingham							
Edward W. Sparrow Hospital.....	Gen	NPAasn	225	190	52	1,061	9,045
Ingham Sanatorium.....	TB	County	135	124	..	...	195
St. Lawrence Hospital.....	Gen	Church	185	145	45	1,419	6,897
Lapeer, 5,365—Lapeer							
Lapeer City Hospital.....	Gen	Part	18	7	4	54	180
Lapeer State Home and Training School.....	MeDe	State	4,021	4,030	6	6	360
Laurium, 3,929—Houghton							
Calumet Public Hospital.....	Gen	NPAasn	29	18	12	198	911
Ludington, 8,701—Mason							
Paulina Stearns Hospital.....	Gen	NPAasn	46	26	6	273	1,221
Manistee, 8,694—Manistee							
Mercy Hospital and Sanit. Gen		Church	50	25	8	229	949
Manistique, 5,359—Schoolcraft							
Shaw General Hospital.....	Gen	Indiv	20	15	10	163	373
Marquette, 15,928—Marquette							
Morgan Heights Sanat. Gen		County	90	60	..	...	57
St. Luke's Hospital.....	Gen	NPAasn	142	89	12	263	2,311
St. Mary's Hospital.....	Gen	Church	60	48	14	212	1,116
Marshall, 5,253—Calhoun							
Oaklawn Hospital.....	Gen	NPAasn	18	10	11	205	569
Mason, 2,867—Ingham							
Corsaut Hospital.....	Gen	Indiv	16	8	5	67	287
Menominee, 10,230—Menominee							
St. Joseph's Hospital.....	Gen	Church	55	38	13	374	2,614
Milan, 2,340—Washtenaw							
Federal Correctional Institution.....	Inst	USPHS	38	14	..	...	241
Monroe, 18,478—Monroe							
Mercy Hospital.....	Gen	Church	65	56	18	620	2,406
Monroe Hospital.....	Gen	NPAasn	63	61	23	644	3,218
Morenci, 1,845—Lenawee							
Blanchard Hospital.....	Gen	NPAasn	14	7	6	65	478
Mount Clemens, 14,389—Macomb							
St. Joseph Hospital.....	Gen	Church	127	124	34	1,098	4,535
Mount Pleasant, 8,413—Isabella							
Central Michigan Community Hospital.....	Gen	NPAasn	50	...	14	Estab.	1943
Munising, 4,409—Alger							
Munising Hospital.....	Gen	NPAasn	25	10	5	56	522
Muskegon, 47,697—Muskegon							
Hackley Hospital.....	Gen	NPAasn	101	77	20	756	4,094
Mercy Hospital.....	Gen	Church	119	98	33	1,577	5,314
Muskegon County Sanat. Gen		County	85	83	..	...	73
Newberry, 2,732—Luce							
Newberry Clinic Hospital.....	Gen	Part	18	5	9	43	272
Newberry State Hospital.....	Ment	State	1,576	1,516	..	...	534

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Niles, 11,328—Berrien							
Pawating Hospital.....	Gen	NPAasn	35	35	20	542	1,731
Northville, 3,032—Wayne							
East Lawn Sanatorium.....	TB	Corp	95	77	..	...	75
Sessions Hospital.....	Gen	NPAasn	25	11	8	350	450
Wm. H. Maybury Sanatorium (Detroit Municipal Tuberculosis Sanatorium).....	TB	City	843	749	..	...	786
Norway, 3,728—Dickinson							
Penn Iron Mining Company Hospital.....	Gen	NPAasn	12	9	7	120	437
Omer, 295—Arenac							
Omer Hospital.....	Gen	Indiv	12	7	5	55	211
Ontonagon, 2,290—Ontonagon							
Ontonagon Hospital.....	Gen	NPAasn	16	12	3	77	472
Oshtemo, 235—Kalamazoo							
Pine Crest Sanatorium.....	TB	Corp	120	91	..	...	94
Owosso, 14,424—Shiawassee							
Memorial Hospital.....	Gen	NPAasn	80	61	15	704	2,657
Paw Paw, 1,910—Van Buren							
Lake View Municipal Hosp... Gen		City	22	7	6	117	653
Petoskey, 6,019—Emmet							
Little Traverse Hospital.....	Gen	NPAasn	63	66	5	163	2,165
Lockwood General Hospital... Gen		City	50	37	10	196	1,601
Plainwell, 2,424—Allegan							
Wm. Crispe Hospital.....	Gen	City	25	13	11	238	654
Plymouth, 5,360—Wayne							
Plymouth Hospital.....	Gen	Part	10	3	3	91	275
Pontiac, 66,026—Oakland							
Oakland County Contagious Hospital.....	Iso	County	85	35	..	...	646
Oakland County Tuberculosis Sanatorium.....	TB	County	243	211	..	...	233
Pontiac General Hospital.....	Gen	City	180	167	40	1,302	7,171
Pontiac State Hospital.....	Ment	State	2,371	2,252	..	...	571
St. Joseph Mercy Hosp. Gen		Church	226	238	133	2,173	8,932
Port Huron, 32,750—St. Clair							
Port Huron Hospital.....	Gen	NPAasn	120	89	24	776	4,023
Powers, 258—Menominee							
Pinecrest Sanatorium.....	TB	Counties	140	135	..	...	145
Reed City, 1,845—Oscoda							
Reed City Hospital.....	Gen	City	34	26	7	193	834
River Rouge, 17,008—Wayne							
Sidney A. Sumbly Memorial Hospital.....	Gen	NPAasn	26	16	6	67	302
Rochester, 3,759—Oakland							
Haven Sanitarium.....	N&M	Corp	41	36	..	...	347
Romeo, 2,627—Macomb							
Wehenkel Sanatorium.....	TB	Indiv	40	38	..	...	164
Royal Oak, 25,087—Oakland							
Royal Oak General Hospital. Gen		City	24	17	12	306	1,036
Saginaw, 82,794—Saginaw							
Saginaw County Hospital.....	Tb	County	175	144	..	...	372
Saginaw County Infirmary Hospital.....	Gen	County	43	39	5	10	266
Saginaw General Hospital.....	Gen	NPAasn	118	96	33	1,168	3,961
St. Luke's Hospital.....	Gen	Church	56	40	18	595	2,355
St. Mary's Hospital.....	Gen	Church	168	128	36	1,187	5,986
St. Clair, 3,471—St. Clair							
St. Clair Community Hosp... Gen		City	21	13	10	224	685
St. Johns, 4,422—Clinton							
Clinton Memorial Hospital.....	Gen	NPAasn	55	48	10	301	1,670
St. Joseph, 8,963—Berrien							
St. Joseph Michigan Hosp... Gen		NPAasn	41	27	12	292	1,386
Sault Ste. Marie, 15,847—Chippewa							
Chippewa County War Memorial Hospital.....	Gen	County	100	90	17	692	3,294
Station Hospital.....	Gen	Army	45	38	..	...	545
Selfridge Field, —Macomb							
Station Hospital.....	Gen	Army	83	45	5	31	1,112
Shelby, 1,367—Oceana							
Shelby Hospital.....	Gen	City	10	9	4	100	420
South Haven, 4,745—Van Buren							
South Haven Hospital.....	Gen	City	42	26	11	249	958
Stambaugh, 2,081—Iron							
General Hospital Company of Iron River District.....	Gen	NPAasn	29	20	12	280	898
Sturgis, 7,214—St. Joseph							
Sturgis Memorial Hospital... Gen		City	40	27	10	435	1,244
Tecumseh, 2,921—Lenawee							
Tecumseh Hospital.....	Gen	City	35	20	16	261	640
Three Rivers, 6,710—St. Joseph							
Three Rivers Hospital.....	Gen	City	34	22	6	146	1,012
Traverse City, 14,455—Grand Traverse							
Central Michigan Children's Clinic.....	Chil	NPAState	26	16	..	...	249
Grand Traverse County Hosp. Gen		County	20	7	4	42	294
James Decker Munson Hospital.....	Gen	State	105	97	17	409	2,462
Traverse City State Hosp. Gen		State	2,743	2,563	..	...	621
Trimountain, 775—Houghton							
Copper Range Hospital.....	Gen	NPAasn	20	9	5	61	309
Wakeland, 3,591—Gogebic							
Wakeland Hospital.....	Gen	NPAasn	14	11	5	130	321
Wayne, 4,222—Wayne							
Parker-Vincent Hospital.....	Gen	NPAasn	13	7	7	196	467
Wayne Clinic.....	Gen	NPAasn	15	5	6	79	293
Wayne General Hospital.....	Gen	NPAasn	30	25	11	309	1,331
West Branch, 1,963—Ogemaw							
Tolfree Memorial Hospital... Gen		City	16	9	5	193	521

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Wyandotte, 30,618—Wayne	Gen	City	173	112	42	1,521	5,780
Wyandotte General Hospital	Gen	City	40	38	20	648	1,098
Ypsilanti, 12,121—Washtenaw	Gen	City	125	62	..	..	55
Beyer Memorial Hospital	Gen	City	3,240	1,506	..	..	714
Hull Memorial City Hospital	Unit of Beyer Memorial Hospital	..	..	..	..	..	..
Leland Sanatorium	TB	NPAasn	13	8	5	140	358
Ypsilanti State Hospital	Gen	State	..	..	..	..	..
Zeeland, 3,007—Ottawa	Gen	NPAasn	..	..	..	..	..
Thomas G. Hulzinga Memorial Hospital	Gen	NPAasn	..	..	..	..	..
Related Institutions							
Alma, 7,202—Gratiot	Gen	Inst	45	27	..	..	164
Michigan Masonic Home and Hospital	Inst	NPAasn	1,020	857	..	..	140
Coldwater, 7,347—Branch	Gen	State	24	12	..	..	198
Coldwater State Home and Training School	MeDe	State	85	55	..	..	212
Detroit, 1,235,452—Wayne	Gen	Indiv	35	28	..	..	195
Central Hospital	Gen	Indiv	44	40	..	..	176
DeNike Sanitarium	Alcoh	Corp	7	1	..	..	335
Doctor's Hospital	Conv	Indiv	32	23	..	..	62
General Hospital and Clinic	TB	Indiv	..	..	..	..	..
Parson's Clinic and Hospital	ENT	NPAasn	..	..	..	..	..
East Grand Rapids (Reed's Lake P.O.), 4,899—Kent	Gen	Corp	..	..	..	..	..
O'Keefe Sanitarium	N&M	Corp	..	..	..	..	..
Farmington, 1,510—Oakland	Gen	Inst	200	83	..	..	354
Children's Hospital Convalescent Home	Conv	NPAasn	22	7	15	242	875
Ferndale, 22,523—Oakland	Gen	NPAasn	60	66	12	24	304
Ardmore Hospital	Gen	NPAasn	32	10	..	..	386
Flint, 151,545—Genesee	Gen	Inst	110	89	..	..	345
Genesee County Hospital and Infirmary	Gen	Inst	28	2	..	..	41
Grand Rapids, 164,292—Kent	Gen	Inst	40	23	25	115	131
Kent County Receiving Hosp. Ment	County	..	..	..	..	..	..
Mary Free Bed Guild Convalescent Home	Orth	NPAasn	24	10	..	..	423
Municipal Isolation Hospital	Gen	City	25	12	12	50	56
Salvation Army Evangeline Booth Home and Hospital	Mat	Church	..	..	..	..	..
Ionia, 6,392—Ionia	Gen	Inst	25	5	..	..	172
Michigan State Reformatory	Inst	State	200	112	..	..	1,263
Jackson, 49,656—Jackson	Gen	Inst	50	16	..	..	710
Florence Crittenton Home and Hospital	Mat	NPAasn	45	12	6	1	359
Jackson County Isolation Hospital	Isolation	County	24	4	..	..	72
Southern Michigan Prison Hospital	Inst	State	..	..	..	..	..
Lansing, 78,753—Ingham	Gen	Inst	50	38	..	..	155
Boys' Vocational School Hospital	Inst	State	300	332	..	..	57
Lansing City Hospital	Isolation	CyCo	835	543	..	..	133
Marquette, 15,928—Marquette	Gen	Inst	225	..	..	..	..
Marquette Branch Prison Hospital	Inst	State	18	4	6	..	166
Mount Clemens, 14,389—Macomb	Gen	Inst	9	6	5	113	292
George H. Cummings Memorial Hospital School	Orth	NPAasn	14	..	14	273	282
Mount Pleasant, 8,413—Isabella	Gen	Inst	12	6	3	83	361
Mount Pleasant State Home and Training School	MeDe	State	..	..	..	..	..
Northville, 3,632—Wayne	Gen	Inst	..	..	..	..	..
Wayne County Training School	MeDe	County	..	..	..	..	..
Pontiac, 69,626—Oakland	Gen	Inst	..	..	..	..	..
Oakland County Infirmary	Inst	County	..	..	..	..	..
Port Huron, 32,759—St. Clair	Gen	City	..	..	..	..	..
Port Huron Emergency Hosp. Isolation	Isolation	City	..	..	..	..	..
Stockbridge, 852—Ingham	Gen	Indiv	..	..	..	..	..
Rowe Memorial Hospital	Gen	Indiv	..	..	..	..	..
Trenton, 5,384—Wayne	Mat	Indiv	..	..	..	..	..
Trenton Hospital	Mat	Indiv	..	..	..	..	..
Vicksburg, 1,774—Kalamazoo	Gen	City	..	..	..	..	..
Franklin Memorial Hospital	Gen	City	..	..	..	..	..

MINNESOTA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Ada, 1,978—Norman	Gen	City	23	10	6	154	592
Ada Hospital	Gen	City	16	10	6	125	456
Adrian, 1,066—Nobles	Gen	NPAasn	480	315	..	..	413
Adrian Hospital	Gen	NPAasn	72	58	18	730	2,685
Ab-gwah-ching, 15—Cass	TB	State	30	12	6	74	511
Minnesota State Sanatorium	TB	State	20	14	6	169	602
Albert Lea, 12,200—Freeborn	Gen	NPAasn	15	8	9	153	387
Nave Hospital	Gen	NPAasn	1,490	1,354	..	..	39
Alexandria, 5,051—Douglas	Gen	NPAasn	20	10	5	69	502
Douglas County Hospital	Gen	NPAasn	105	45	25	651	2,098
St. Luke's Hospital	Gen	NPAasn	48	48	..	..	40
Anoka, 6,426—Anoka	Gen	NPAasn	..	..	..	..	..
Anoka Hospital	Gen	NPAasn	..	..	..	..	..
Anoka State Hospital	Gen	NPAasn	..	..	..	..	..
Appleton, 1,877—Swift	Gen	Indiv	..	..	..	..	..
Knuflman Hospital	Gen	Indiv	..	..	..	..	..
Austin, 18,307—Mower	Gen	NPAasn	..	..	..	..	..
St. Olaf Hospital	Gen	NPAasn	..	..	..	..	..
Battle Lake, 623—Otter Tail	TB	County	..	..	..	..	..
Otter Tail County Sanat.	TB	County	..	..	..	..	..

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Bemidji, 9,427—Beltrami	Gen	NPAasn	60	38	15	312	1,830
Lutheran Hospital	Gen	NPAasn	22	15	8	197	729
Benson, 2,729—Swift	Gen	NPAasn	20	14	8	198	766
Swift County Hospital	Gen	NPAasn	10	7	4	71	422
Bertha, 578—Todd	Gen	NPAasn	10	4	7	75	239
Thiel Hospital	Gen	NPAasn	10	..	..	..	..
Bigfork, 382—Itasca	Gen	City	19	11	6	83	416
Northern Itasca Hospital	Gen	City	75	45	16	400	2,410
Blwabik, 1,304—St. Louis	Gen	Indiv	60	40	10	400	1,753
Blwabik Hospital	Gen	Indiv	12	5	4	48	152
Blue Earth, 3,702—Faribault	Gen	Indiv	44	37	..	..	668
Blue Earth Hospital	Gen	Indiv	14	7	7	92	390
Braham, 578—Isanti	Gen	Indiv	1,105	1,102	..	..	116
Braham Hospital	Gen	Indiv	27	11	6	98	540
Brainerd, 12,071—Crow Wing	Gen	Church	110	103	..	..	99
St. Joseph's Hospital	Gen	Church	20	9	4	17	90
Breckenridge, 2,745—Wilkin	Gen	Church	32	20	4	96	630
St. Francis Hospital	Gen	Church	15	8	3	56	468
Buffalo, 1,035—Wright	Gen	Part	18	14	5	152	490
Cattaraugus Hospital	Gen	Part	10	7	4	96	305
Buhl, 1,600—St. Louis	Gen	County	22	16	4	69	467
Range Hospital	Gen	County	42	15	12	158	968
Caledonia, 1,985—Houston	Gen	Indiv	13	7	4	102	348
Caledonia Hospital	Gen	Indiv	54	36	12	160	1,468
Cambridge, 1,592—Isanti	Gen	Indiv	60	52	15	240	1,545
Minnesota Colony for Epileptics	Epil	State	72	58	..	..	61
Canby, 2,099—Yellow Medicine	Gen	City	22	6	6	73	223
John Swenson Memorial Hospital	Gen	City	35	17	5	95	474
Cannon Falls, 1,544—Goodhue	Gen	County	27	18	..	..	26
Mineral Springs Sanatorium	TB	Counties	50	40	15	334	1,445
Cass Lake, 1,904—Cass	Gen	NPAasn	83	62	..	..	1,377
Cass Lake General Hospital	Gen	NPAasn	237	202	33	1,145	8,155
Cass Lake Indian Hospital	Gen	IA	290	283	30	1,377	9,474
Chatfield, 1,640—Fillmore	Gen	Indiv	40	32	10	194	2,046
Chatfield Hospital	Gen	Indiv	15	7	5	123	542
Chisholm, 7,487—St. Louis	Gen	Part	30	16	8	151	595
McNaba Clinic Hospital	Gen	Part	36	14	14	217	974
Clarkfield, 945—Yellow Medicine	Gen	NPAasn	14	8	6	80	466
Clarkfield Community Hosp.	Gen	NPAasn	50	40	15	334	1,445
Cloquet, 7,304—Carlton	Gen	IA	83	62	..	..	1,377
Fond du Lac Indian Hosp.	Gen	IA	237	202	33	1,145	8,155
Raiter Hospital	Gen	NPAasn	290	283	30	1,377	9,474
Cokato, 1,175—Wright	Gen	Indiv	40	32	10	194	2,046
Cokato Hospital	Gen	Indiv	15	7	5	123	542
Crookston, 7,161—Polk	Gen	Church	30	16	8	151	595
Bethesda Hospital	Gen	Church	72	58	..	..	61
St. Vincent's Hospital	Gen	Church	22	6	6	73	223
Sunnyside Sanatorium	TB	Counties	35	17	5	95	474
Crosby, 2,954—Crow Wing	Gen	Indiv	27	18	..	..	26
Miner's Hospital	Gen	Indiv	50	40	15	334	1,445
Dawson, 1,646—Lac qui Parle	Gen	NPAasn	83	62	..	..	1,377
Dawson Hospital	Gen	NPAasn	237	202	33	1,145	8,155
Deerwood, 570—Crow Wing	TB	Counties	290	283	30	1,377	9,474
Deerwood Sanatorium	TB	Counties	40	32	10	194	2,046
Detroit Lakes, 5,015—Becker	Gen	Church	50	40	15	334	1,445
St. Mary's Hospital	Gen	Church	83	62	..	..	1,377
Duluth, 101,065—St. Louis	Gen	NPAasn	237	202	33	1,145	8,155
Miller Memorial Hospital	Gen	NPAasn	290	283	30	1,377	9,474
St. Luke's Hospital	Gen	Church	40	32	10	194	2,046
St. Mary's Hospital	Gen	Church	15	7	5	123	542
Webber Hospital	Gen	Indiv	30	16	8	151	595
Ely, 5,970—St. Louis	Gen	Part	36	14	14	217	974
Shipman Hospital	Gen	Part	14	8	6	80	466
Eveleth, 6,887—St. Louis	Gen	Corp	50	40	15	334	1,445
More Hospital and Clinic	Gen	Corp	83	62	..	..	1,377
Fairmont, 6,988—Martin	Gen	NPAasn	237	202	33	1,145	8,155
Fairmont Community Hosp.	Gen	NPAasn	290	283	30	1,377	9,474
Hunt Hospital	Gen	Part	40	32	10	194	2,046
Faribault, 14,327—Rice	Gen	Part	15	7	5	123	542
Minnesota School for Feeble-minded	MeDe	State	2,535	2,500	17	22	273
St. Luc's Evangelical Deaconess Hospital	Gen	Church	60	40	18	420	1,524
Farmington, 1,580—Dakota	Gen	NPAasn	11	6	6	70	190
Emond Hospital	Gen	NPAasn	30	18	4	85	466
Sanford Hospital	Gen	NPAasn	..	..	..	..	..
Fergus Falls, 10,848—Otter Tail	Gen	State	2,000	1,974	..	..	515
Fergus Falls State Hospital	Gen	State	49	37	12	236	1,438
George B. Wright Memorial Hospital	Gen	NPAasn	60	33	15	265	1,230
St. Luke's Hospital	Gen	NPAasn	177	119	8	29	1,710
Fort Snelling, —Hennepin	Gen	Army	12	11	6	182	480
Station Hospital	Gen	Part	38	35	14	215	1,271
Fosston, 1,271—Polk	Gen	City	27	16	10	150	650
Fosston Hospital	Gen	City	30	22	10	185	916
Glencoe, 2,387—McLeod	Gen	City	50	40	15	483	1,759
Glencoe Municipal Hospital	Gen	City	17	9	5	95	417
Glenwood, 2,564—Pope	Gen	City	48	39	..	..	34
Glenwood Community Hosp.	Gen	City	..	..	..	..	..
Graceville, 1,020—Big Stone	Gen	NPAasn	..	..	..	..	..
West Central Minnesota Hospital	Gen	NPAasn	..	..	..	..	..
Grand Rapids, 4,875—Itasca	Gen	County	..	..	..	..	..
Itasca County Hospital	Gen	County	..	..	..	..	..
Granite Falls, 2,388—Yellow Medicine	Gen	NPAasn	..	..	..	..	..
Granite Falls Hospital	Gen	NPAasn	..	..	..	..	..
Riverside Sanatorium	TB	Counties	..	..	..	..	..
Hallock, 1,353—Kittson	Gen	NPAasn	..	..	..	..	..
Kittson War Veterans' Memorial Hospital	Gen	NPAasn	..	..	..	..	..

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Hastings, 5,662—Dakota							
Hastings State Hospital.....	Ment	State	1,060	1,030	..	...	99
Hendricks, 740—Lincoln							
Hendricks Community Hosp. Gen	NPAssn		25	23	8	96	1,292
Heron Lake, 832—Jackson							
Southwestern Minnesota Hos- pital.....	Gen	Indiv	10	6	5	69	147
Hibbing, 16,335—St. Louis							
Hibbing General Hospital.....	Gen	Church	132	80	20	548	2,010
Hutchinson, 3,887—McLeod							
Hutchinson Community Hosp. Gen	NPAssn		28	24	10	210	896
Jackson, 2,840—Jackson							
Halloran Hospital.....	Gen	Indiv	15	10	5	93	586
Lake City, 3,204—Wabasha							
Lake City Hospital.....	Gen	City	30	22	8	103	688
Lake Park, 654—Becker							
Sand Beach Sanatorium.....	TB	Counties	42	33	..	...	38
Litchfield, 3,920—Meeker							
Litchfield Hospital.....	Gen	NPAssn	43	30	12	247	1,320
Little Falls, 6,047—Morrison							
St. Gabriel's Hospital.....	Gen	Church	84	43	18	415	2,143
Littlefork, 608—Koochiching							
Littlefork Hospital.....	Gen	NPAssn	22	16	8	93	751
Long Prairie, 2,311—Todd							
Long Prairie Hospital.....	Gen	NPAssn	20	9	6	91	466
Luverne, 3,114—Rock							
Luverne Hospital.....	Gen	NPAssn	15	7	6	178	560
Madison, 2,312—Lac qui Parle							
Ebenezer Lutheran Hospital.....	Gen	Church	20	16	7	128	635
Mahnomen, 1,429—Mahnomen							
Mahnomen Hospital.....	Gen	Indiv	15	7	6	66	339
Mankato, 15,654—Blue Earth							
Immanuel Hospital.....	Gen	Church	60	52	15	340	1,437
St. Joseph's Hospital.....	Gen	Church	93	59	18	458	2,351
Marshall, 4,590—Lyon							
Anna Maria Memorial Hosp.....	Gen	Indiv	13	10	6	162	476
Marshall Hospital.....	Gen	NPAssn	25	11	5	47	340
Melrose, 2,015—Stearns							
Melrose Hospital.....	Gen	Indiv	22	10	7	105	1,604
Milaca, 1,627—Mille Lacs							
Memorial Hospital.....	Gen	Indiv	15	12	6	209	759
Minneapolis, 492,370—Hennepin							
Abbott Hospital.....	Gen	Church	150	140	20	587	5,752
Asbury Hospital.....	Gen	Church	140	125	25	724	5,316
Eitel Hospital.....	Gen	NPAssn	100	103	19	520	5,417
Elizabeth Kenny Institute.....	Orth	City	60	20	..	...	117
Elliot Memorial Hospital.....	Unit of University Hospitals						
Fairview Hospital.....	Gen	Church	157	145	35	1,095	6,125
Franklin Hospital.....	ChrConv	NPAssn	68	66	..	...	409
George Chase Christian Memo- rial Cancer Institute.....	Unit of University Hospitals						
Harriet Walker Hospital.....	Mat	NPAssn	57	44	35	140	172
Jannet Children's Hospital.....	Unit of Abbott Hospital						
Lutheran Deaconess Home and Hospital.....	Gen	Church	120	118	30	986	6,306
Maternity Hospital.....	Mat	NPAssn	36	30	42	982	1,176
Minneapolis General Hospi- tal.....	Gen	City	572	396	55	315	8,566
Minnesota General Hospital.....	See University Hospitals						
Northwestern Hospital.....	Gen	NPAssn	230	236	50	1,104	7,584
Ripley Memorial Hospital.....	Unit of Maternity Hospital						
St. Andrew's Hospital.....	Gen	Church	82	50	18	472	2,152
St. Barnabas Hospital.....	Gen	NPAssn	153	141	50	1,269	6,320
St. Mary's Hospital.....	Gen	Church	290	275	50	1,892	10,702
Sheltering Arms Hospital.....	Orth	NPAssn	35	..	..	..	Estab. 1943
Shriners Hospital for Crippled Children.....	Orth	NPAssn	60	50	..	...	110
Swedish Hospital.....	Gen	NPAssn	290	256	72	2,100	11,242
Todd Memorial Eye, Ear, Nose and Throat Hospital.....	Unit of University Hospitals						
U. S. Naval Air Station Dis- pensary.....	Gen	Navy	150	..	..	..	Estab. 1943
University Hospitals.....	Gen	State	450	372	25	295	9,187
Veterans Admin. Facility.....	GenTb	Vet	666	534	..	...	3,850
William Henry Eustis Chil- dren's Hospital.....	Unit of University Hospitals						
Montevideo, 5,220—Chippewa							
Montevideo Hospital.....	Gen	NPAssn	50	35	10	317	1,464
Moorhead, 9,491—Clay							
St. Ansgars Hospital.....	Gen	Church	50	28	10	232	1,303
Moose Lake, 1,432—Carlton							
Moose Lake Community Hos- pital.....	Gen	Indiv	12	7	4	63	224
Moose Lake State Hospital.....	Ment	State	1,000	948	..	...	383
Morris, 3,214—Stevens							
Morris Hospital.....	Gen	Indiv	14	11	0	121	510
Stevens County Hospi- tal.....	Gen	NPAssn	18	14	8	173	600
Mountain							
Bethel							
Clinic Hospital.....	Gen	Church	25	10	8	153	395
New Prague, 1,645—Le Sueur							
New Prague Community Hos- pital.....	Gen	Part	30	14	..	...	463
New Union, 8,743—Brown							
Loretto Hospital.....	Gen	Church	50	30	10	210	1,047
Union Hospital.....	Gen	NPAssn	62	42	12	230	1,447
Nopemning, 75—St. Louis							
Nopemning Sanatorium.....	TB	County	272	252	..	...	244
Northfield, 4,533—Rice							
Northfield City Hospital.....	Gen	City	30	21	10	205	890

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Oak Terrace, 200—Hennepin							
Christian Memorial Tubercu- losis Hospital.....	Unit of Glen Lake Sanatorium						
Glen Lake Sanatorium.....	TB	County	691	551	..	...	458
Ortonville, 2,469—Big Stone							
Ortonville Evangelical Hosp.....	Gen	Church	20	10	4	105	479
Owatonna, 8,691—Steele							
Owatonna City Hospital.....	Gen	City	50	38	10	317	1,591
Parkers Prairie, 781—Otter Tail							
Leibold Hospital.....	Gen	Indiv	12	6	3	96	802
Paynesville, 1,317—Stearns							
Myre Hospital.....	Gen	Indiv	10	5	4	39	199
Perham, 1,534—Otter Tail							
St. James' Hospital.....	Gen	Church	40	25	10	170	853
Pine City, 1,718—Pine							
Lakeside Memorial Hospital.....	Gen	NPAssn	28	14	6	80	383
Pine River, 574—Cass							
Pine River Hospital.....	Gen	Indiv	19	10	5	50	480
Pipestone, 4,682—Pipestone							
Ashton Memorial Hospital.....	Gen	NPAssn	50	25	8	249	1,340
Puposky, 75—Beltrami							
Lake Julia Tuberculosis Sana- torium.....	TB	Counties	57	52	..	...	60
Redlake, 150—Beltrami							
Redlake Indian Hospital.....	Gen	IA	23	10	6	78	394
Red Wing, 9,962—Goodhue							
Red Wing Hospital.....	Gen	City	40	32	9	116	871
St. John's Hospital.....	Gen	NPAssn	80	60	15	393	2,478
Redwood Falls, 3,270—Redwood							
Redwood Falls Hospital.....	Gen	City	23	9	6	172	480
Richmond, 634—Stearns							
Richmond Hospital.....	Gen	NPAssn	10	7	4	83	389
Rochester, 26,312—Olmsted							
Colonial Hospital.....	Gen	Corp	258	241	..	...	7,817
Kahler Hospital.....	Gen	Corp	130	105	..	...	3,972
Rochester State Hospital.....	Ment	State	1,608	1,532	..	...	577
St. Mary's Hospital.....	Gen	Church	820	621	56	765	16,265
Worrall Hospital.....	SkCaENT	Corp	188	155	..	...	8,009
Roseau, 1,775—Roseau							
Budd Hospital.....	Gen	NPAssn	25	9	6	116	842
Rush City, 1,020—Chisago							
Rush City Hospital.....	Gen	City	21	18	7	141	730
St. Cloud, 24,173—Stearns							
Minnesota State Reformatory							
Hospital.....	Inst	State	30	15	..	...	299
St. Cloud Hospital.....	Gen	Church	229	167	35	982	6,155
Veterans Admin. Facility.....	Ment	Vet	1,197	1,107	..	...	290
St. James, 3,400—Watsonwan							
St. James Hospital.....	Gen	Church	25	13	10	130	632
St. Paul, 287,736—Ramsey							
Aneker Hospital.....	GenTb	CyCo	850	473	55	311	6,527
Bethesda Hospital.....	Gen	Church	150	143	30	1,552	6,083
Charles T. Miller Hosp.....	Gen	NPAssn	250	223	50	1,247	8,081
Children's Hospital.....	Chil	NPAssn	65	51	..	...	1,875
Gillette State Hospital for Crippled Children.....	Orth	State	250	171	..	...	616
Midway Hospital.....	Gen	Church	108	93	30	977	4,078
Mounds Park Hospital.....	Gen	Church	116	114	14	447	2,463
Northern Pacific Beneficial Asso- ciation Hospital.....	Gen	NPAssn	135	97	12	120	3,176
Ramsey County Tuberculosis Pavilion.....	Unit of Aneker Hospital						
St. John's Hospital.....	Gen	Church	65	60	15	514	2,925
St. Joseph's Hospital.....	Gen	Church	263	220	45	1,474	10,335
St. Luke's Hospital.....	Gen	NPAssn	125	..	..	..	No data supplied
Salvation Army Booth Memo- rial Hospital.....	Mat	Church	50	25	35	101	119
West Side General Hospital.....	Gen	Church	55	51	15	404	1,669
St. Peter, 5,870—Nicollet							
Community Hospital.....	Gen	City	30	16	11	271	808
St. Peter State Hospital.....	Ment	State	2,315	2,205	..	...	591
Sandstone, 1,559—Pine							
Federal Correctional Institu- tion.....	Inst	USPHS	27	12	..	...	462
Shakopee, 2,418—Scott							
St. Francis Hospital.....	Gen	Church	17	15	8	184	552
Slayton, 1,587—Murray							
Home Hospital.....	Gen	NPAssn	25	17	10	147	760
Sleepy Eye, 2,923—Brown							
Sleepy Eye Municipal Hosp.....	Gen	City	30	9	14	146	451
Springfield, 2,361—Brown							
St. John's Hospital.....	Gen	Church	23	19	5	188	713
Spring Grove, 967—Houston							
Spring Grove Hospital.....	Gen	NPAssn	15	8	7	103	316
Staples, 2,952—Todd							
Municipal Hospital.....	Gen	City	24	13	7	98	511
Starbuck, 972—Pope							
Minnewaska Hospital.....	Gen	NPAssn	15	12	4	95	379
Stillwater, 7,013—Washington							
Lakeview Memorial Hosp.....	Gen	CyCo	38	27	8	259	1,084
Minnesota State Prison Hos- pital.....	Inst	State	66	19	..	...	378
Thief River Falls, 6,019—Pennington							
Mercy Hospital.....	Gen	NPAssn	24	23	8	202	1,044
Oakland Park Sanatorium.....	TB	Counties	65	52	..	...	26
St. Luke's Hospital.....	Gen	NPAssn	42	25	6	117	956
Tracy, 3,085—Lyon							
Clinic Hospital.....	Gen	NPAssn	14	6	5	58	224
Tracy Hospital.....	Gen	NPAssn	33	14	8	120	747
Two Harbors, 4,046—Lake							
Two Harbors Hospital.....	Gen	Part	30	18	6	120	652

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Tyler, 1,005—Lincoln	Gen	City	36	19	10	200	1,155
Virginia, 12,264—St. Louis	Gen	City	100	56	25	401	1,598
Virginia Municipal Hospital	Gen	City	100	56	25	401	1,598
Wabasha, 2,368—Wabasha	Gen	City	30	27	..	..	37
Buena Vista Sanatorium	TB	Counties	70	21	9	131	765
St. Elizabeth's Hospital	Gen	Church	21	11	8	60	352
Waconia, 1,315—Carver	Gen	Indiv	37	31	..	..	30
Nagel Hospital	Gen	NPAssn	41	34	10	336	1,509
Wadena, 2,916—Wadena	Gen	Indiv	16	4	4	47	191
Fair Oaks Lodge Sanatorium	TB	Counties	30	10	6	106	618
Wesley Hospital	Gen	NPAssn	25	17	5	100	623
Walker, 979—Cass	Gen	Indiv	26	12	9	267	812
Walker Hospital	Gen	Indiv	22	13	6	119	498
Warren, 1,639—Marshall	Gen	Church	35	33	12	419	1,791
Warren Hospital	Gen	Church	35	33	12	419	1,791
Warrond, 1,309—Roseau	Gen	State	1,465	1,405	..	..	162
Warrond Municipal Hospital	Gen	City	28	11	10	135	511
Waseca, 4,270—Waseca	Gen	City	12	7	4	101	334
Waseca Memorial Hospital	Gen	City	112	69	20	622	2,011
White Earth, 350—Becker	Gen	IA	54	49	..	..	31
White Earth Indian Hospital	Gen	IA	23	25	12	218	1,502
Willmar, 7,623—Kandiyohi	Gen	NPAssn	..	..	..	..	..
Rice Memorial Hospital	Gen	City	..	..	..	..	..
Willmar State Hospital	Gen	State	..	..	..	..	..
Windom, 2,507—Cottonwood	Gen	NPAssn	..	..	..	..	..
Windom Hospital	Gen	NPAssn	..	..	..	..	..
Winchape, 1,622—Faribault	Gen	Part	..	..	..	..	..
Winchape Community Hosp.	Gen	Part	..	..	..	..	..
Winona, 22,460—Winona	Gen	NPAssn	..	..	..	..	..
Winona General Hospital	Gen	NPAssn	..	..	..	..	..
Worthington, 5,918—Nobles	Gen	NPAssn	..	..	..	..	..
Southwestern Minnesota Sanatorium	TB	Counties	..	..	..	..	..
Worthington Hospital	Gen	NPAssn	..	..	..	..	..

Related Institutions

Ely, 5,970—St. Louis	Detention Hospital	City	19	1	..	..	8
Hastings, 5,662—Dakota	St. Francis Hospital	Gen	NPAssn	25	20	4	300
Madella, 1,632—Watowan	Madella Hospital	Gen	City	13	4	4	72
Minneapolis, 492,570—Hennepin	Glenwood Hills Hospitals	NAM	NPAssn	42	31	..	279
Homewood Hospital	Unit of Glenwood Hills Hospitals	..	..	..	..	..	..
Minnesota Soldiers' Home Hospital	..	Inst	State	84	51	..	214
Arkview Sanatorium	Chr	City	174	151	..	..	375
West Hospital	NAM	Part	19	18	..	..	242
Vocational Nursing Home	Conv	NPAssn	12	38	..	..	29
Women's Welfare League Home for Convalescents	Conv	NPAssn	21	19	..	..	49
Onatonna, 8,614—Steele	Minnesota State Public School Hospital	Inst	State	12	13	..	687
Pelland Rapids, 1,560—Otter Tail	Dr. Boysen's Hospital	Gen	Indiv	8	2	4	37
Pipestone, 4,682—Pipestone	Pipestone General Indian Hospital	Gen	IA	36	20	4	303
Red Wing, 9,962—Goodhue	Minnesota State Training School for Boys	Inst	State	26	8	..	1,128
St. Paul, 287,736—Ramsey	Children's Preventorium of Ramsey County	TB	CyCo	60	79	..	24
Samaritan Hospital	Gen	NPAssn	26	19	8	219	698
Shakopee, 2,418—Scott	Mudcura Sanatorium	Conv	Corp	75	35	..	1,331
Wayzata, 1,473—Hennepin	Minnetonka Hospital	Gen	NPAssn	12	8	3	42

MISSISSIPPI

Hospitals and Sanatoriums

Aberdeen, 4,716—Monroe	Aberdeen Hospital	Gen	NPAssn	25	9	6	62	425
Amory, 3,727—Monroe	Gilmore Sanatorium	Gen	NPAssn	28	10	4	60	320
Baldwyn, 1,279—Lee	Baldwyn Hospital	Gen	Indiv	10	6	3	48	312
Biloxi, 17,475—Harrison	New Biloxi Hospital	Gen	NPAssn	47	45	10	761	2,145
Veterans Admin. Facility	Gen	Vet	208	173	..	..	1,449	..
Booneville, 1,893—Prentiss	North East Mississippi Hospital	Gen	NPAssn	40	23	3	147	1,064
Brandon, 1,184—Rankin	Brandon Hospital	Gen	Indiv	22	..	..	..	No data supplied
Brookhaven, 6,242—Lincoln	Kings Daughters Hospital	Gen	NPAssn	45	22	15	289	1,421
Camp Shelby, 30—Forrest	Station Hospital	Gen	Army	1,000	..	..	..	Estab. 1940
Canton, 6,011—Madison	Kings Daughters Hospital	Gen	NPAssn	39	20	6	100	492
Centerville, 1,163—Wilkinson	Field Memorial Hospital	Gen	Part	28	21	8	110	1,059
Charleston, 2,100—Tallahatchie	Tallahatchie Hospital	Gen	Indiv	25	17	4	101	819

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admis- sions †
Clarksdale, 10,109—Clarksdale	Gen	NPAAssn	32	7	10	145	564
Cleveland, 1,001—Clarksdale	Gen	City	22	11	4	87	621
Columbia, 6,061—Marion							
Columbia Clinic-Hospital	Gen	NPAAssn	35	20	4	38	1,454
Daly Hospital	Gen	Indiv	17	15	6	120	1,400
Columbus, 13,645—Lowndes							
Columbus Hospital	Gen	NPAAssn	23	14	8	302	823
Doster Hospital	Gen	Indiv	42	30	8	155	1,114
Corinth, 7,818—Alcorn							
Corinth Hospital	Gen	Part	20	8	8	131	508
McRae Hospital	Gen	NPAAssn	50	14	8	85	762
Greenville, 20,892—Washington							
Kings Daughters Hospital	Gen	NPAAssn	116	86	22	369	3,377
Greenwood, 14,767—Leflore							
Greenwood Colored Hospital	Gen	Part	26	11	3	13	417
Greenwood-Leflore Hospital	Gen	CyCo	63	46	23	329	2,254
Grenada, 5,811—Grenada							
Grenada General Hospital	Gen	Part	67	32	10	219	2,131
Gulfport, 15,103—Harrison							
Gulfport General Hospital	Gen	NPAAssn	35	...	10	Etab.	1943
Kings Daughters Hospital	Gen	NPAAssn	100	32	12	340	1,833
Veterans Admin. Facility	Ment	Vet	785	767	...	...	400
Hattiesburg, 21,026—Forrest							
Methodist Hospital	Gen	Church	75	59	19	800	3,267
South Mississippi Infirmary	Gen	Indiv	65	20	10	169	580
Houston, 1,729—Chickasaw							
Houston Hospital	Gen	NPAAssn	50	25	5	71	1,071
Indianola, 3,601—Sunflower							
Kings Daughters Hospital	Gen	NPAAssn	23	10	6	58	519
Jackson, 62,107—Hinds							
Jackson Infirmary	Gen	NPAAssn	75	56	11	313	3,401
Mississippi Baptist Hosp.	Gen	Church	185	149	25	888	8,990
Mississippi State Charity Hos- pital	Gen	State	103	63	4	51	2,702
Dr. Willis Walley Hosp.	Gen	NPAAssn	70	20	6	57	780
Kosciusko, 4,291—Attala							
Montfort Jones Memorial Hos- pital	Gen	City	50	16	8	178	1,090
Laurel, 20,592—Jones							
Laurel General Hospital	Gen	Indiv	56	33	15	584	2,633
South Mississippi Charity Hos- pital	Gen	State	125	68	15	207	2,502
Lexington, 2,930—Holmes							
Holmes County Community Hospital	Gen	County	25	12	6	85	697
Liberty, 665—Amite							
Marion Butler Memorial Hos- pital	Gen	Part	9	...	No data supplied		
Lumberton, 1,455—Lamar							
City Hospital	Gen	Indiv	22	12	7	85	450
Macon, 2,261—Neshoba							
Macon Hospital	Gen	NPAAssn	25	13	7	59	687
Magee, 1,231—Simpson							
Magee General Hospital	Gen	NPAAssn	28	13	4	117	885
Marks, 1,818—Quitman							
Marks Hospital	Gen	Indiv	15	2	4	133	607
McComb, 9,898—Pike							
McComb City Hospital	Gen	NPAAssn	27	15	6	179	1,332
McComb Infirmary	Gen	NPAAssn	25	20	4	194	1,245
Meridian, 35,481—Lauderdale							
Anderson Infirmary	Gen	NPAAssn	45	23	5	241	1,356
East Mississippi State Hosp.	Ment	State	859	793	...	...	224
Hoye's Sanitarium	N&M	NPAAssn	32	22	...	...	301
Lewis Hospital	Gen	Indiv	12	8	4	50	566
Matty Hersee Hospital	Gen	State	85	46	8	95	1,627
Meridian Sanitarium	Gen	Indiv	75	40	17	230	2,217
Riley's Hospital	Gen	NPAAssn	45	20	6	92	1,269
Rush's Infirmary	Gen	NPAAssn	70	51	10	247	2,215
Morton, 934—Scott							
Scott County Hospital	Gen	Part	21	9	4	111	744
Natchez, 15,296—Adams							
Natchez Charity Hospital	Gen	State	86	43	14	187	1,390
Natchez Sanatorium	Gen	Corp	50	...	No data supplied		
New Albany, 3,602—Union							
Mayes Hospital	Gen	NPAAssn	45	22	6	240	1,040
New Albany Hosp. and Clinic	Gen	NPAAssn	10	4	2	56	328
Newton, 1,800—Newton							
Newton Infirmary	Gen	NPAAssn	25	11	3	100	1,016
Okolona, 2,117—Chickasaw							
Dr. De Van Hansell's Clinic and Hospital	Gen	Indiv	16	5	2	12	181
Oxford, 3,433—Lafayette							
Bramlett Hospital	Gen	Corp	45	25	10	83	812
Oxford Hospital	Gen	Indiv	30	25	5	126	1,549
Pascagoula, 5,900—Jackson							
Jackson County Hospital	Gen	County	80	27	20	647	2,068
Philadelphia, 3,711—Neshoba							
Choctaw-Mississippi Indian Hos- pital	Gen	IA	35	20	7	78	758
Philadelphia Hospital	Gen	NPAAssn	20	19	8	119	786
Pleayune, 5,129—Pearl River							
Martin Sanatorium	Gen	NPAAssn	18	5	6	49	327
Pontotoc, 1,832—Pontotoc							
Pontotoc Clinic	Gen	Part	15	7	2	85	380
Poplarville, 1,664—Pearl River							
Poplarville Hospital	Gen	Corp	26	12	4	40	810
Rosedale, 2,063—Bolivar							
Dr. Nobles' Clinic	Gen	Indiv	25	20	1	15	735
Rosedale-Bolivar County Hos- pital	Gen	City	18	8	4	23	297

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Sanatorium, 200—Simpson Mississippi State Tuberculosis Sanatorium†	1 B	State	42	303		679	
Shelby, 1,906—Bollivar Hall Clinic and Hospital	Gen	NPA'ssn	30	15	8	62	4.6
Starkville, 4,900—Oktibbeha Oktibbeha Hospital	Gen	Indiv	21	7	3	74	401
State College, 800—Oktibbeha James Z. George Memorial Hospital†	Inst	State	44	8			2,020
Tupelo, 8,212—Lee North Mississippi Community Hospital†	Gen	NPA'ssn	45	31	10	314	1,826
Tylertown, 1,476—Walthall Tylertown Hospital	Gen	NPA'ssn	38	18	6	223	917
Walthall Hospital	Gen	NPA'ssn	22	13	4	161	983
Union, 1,243—Newton Laird's Hospital	Gen	NPA'ssn	30	12	6	135	691
Vicksburg, 24,400—Warren Mercy Hospital Street Memorial†	Gen	Church	100	77	16	235	3,470
Mississippi State Charity Hospital†	Gen	State	110	52	10	222	1,007
Vicksburg Hospital†	Gen	NPA'ssn	60	50	12	129	2,411
Vicksburg Infirmary†	Gen	NPA'ssn	65	45	7	89	1,638
Water Valley, 3,340—Xalobusha Water Valley Hospital	Gen	Part	25	12	4	70	432
Whitfield, 300—Rankin Mississippi State Hospital†	Ment	State	3,080	3,300			1,005
Winona, 2,553—Montgomery Winona Infirmary†	Gen	NPA'ssn	35	18	4	112	680
Yazoo City, 7,208—Yazoo Kings Daughters Hospital	Gen	NPA'ssn	40	18	8	138	1,248
Yazoo Clinic and Hospital	Gen	Part	20	12	3	1	894

Related Institutions

Bay St Louis, 4,138—Hancock Kings Daughters and Sons Hospital	Gen	NPA'ssn	10	3	6	120	726
Elizaville, 2,607—Jones Elizaville State School	MeDe	State	400	340			374
Greenville, 20,892—Washington Colored Kings Daughters Hospital	Gen	Indiv	60	30	2	22	1,288

MISSOURI

Hospitals and Sanatoriums

Bethany, 2,682—Harrison Bethany Hospital and Clinic	Gen	Indiv	18	9	5	72	415
Bonne Terre, 3,700—St Francis Bonne Terre Hospital	Gen	NPA'ssn	30	20	8	240	874
Boonville, 6,089—Cooper St Joseph's Hospital†	Gen	Church	70	42	14	220	1,140
Butler, 2,908—Bates Butler Memorial Hospital	Gen	City	20	12	5	156	759
California, 2,020—Montiteau Latham Sanitarium	Gen	Indiv	33	14	4	40	1,409
Cape Girardeau, 19,426—Cape Girardeau St Francis Hospital†	Gen	Church	110	70	22	530	2,891
Southeast Missouri Hospital	Gen	NPA'ssn	60	51	14	384	2,067
Carthage, 10,580—Jasper McCune Brooks Hospital	Gen	City	48	21	12	329	2,088
Cassville, 1,214—Barry Barry County Hospital and Clinic	Gen	Indiv	10	7	3	58	341
Clayton, 13,000—St Louis St Louis County Hosp †††	Gen	County	170	105	35	304	2,483
Clinton, 6,041—Henry Clinton General Hospital	Gen	NPA'ssn	20	11	4	92	401
Columbia, 18,899—Boone Boone County General Hosp †	Gen	County	48	24	5	158	979
Ellis Fischel State Cancer Hospital†	Gen	State	100	86			1,503
Noyes Parker	Gen	University Hospitals					
State Hospital for Crippled Children	Gen	University Hospitals					
University Hospitals†	Gen	State	268	78	10	141	4,100
Excelsior Springs, 4,864—Clay Excelsior Springs Sanitarium and Hospital	Gen	Corp	35	12	8	103	696
Veterans Admin Facility†	Gen	Vet	209	189			788
Farmington, 3,738—St Francis State Hospital No 4†	Ment	State	1,770	1,725			495
Fayette, 2,608—Howard	Gen	Part	20	11	4	33	460
Hannibal, 20,800—Marion Levering Hospital†	Gen	City	150	61	21	272	2,184
St Elizabeth's Hospital†	Gen	Church	90	75	21	410	3,561
Independence, 16,000—Jackson Independence Sanitarium and Hospital†	Gen	Church	109	92	30	708	3,289
Ironton, 1,083—Iron Arcadia Valley Hospital, St Mary's of the Ozarks	Gen	Church	28	18	8	135	686

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Jefferson Barracks, 842—St Louis Station Hospital†	Gen	Army	177	110	6	10	1,604
Veterans Admin Facility†	Gen	Vet	597	416			3,436
Jefferson City, 24,268—Cole Missouri State Penitentiary Hospital†	Inst	State	203	74			1,539
St Mary's Hospital	Gen	Church	100	78	20	061	2,748
Joplin, 37,144—Jasper Freeman Hospital	Gen	Church	87	61	22	410	1,916
St John's Hospital	Gen	Church	100	109	20	689	3,220
Kansas City, 399,178—Jackson Children's Mercy Hospital†	Chil	NPA'ssn	145	111			1,869
Fairmount Maternity Hosp	Mat	Corp	60	40	24	193	221
Kansas City General Hospital†	Gen	City	000	329	40	548	7,736
Kansas City General Hospital No 2†	Gen	City	202	151	24	376	2,863
Kansas City Municipal Tuberculosis Hospital†	TB	City	247	180			222
Major Clinic	N&M	NPA'ssn	30				No data supplied
Menorah Hospital†	Gen	NPA'ssn	135	104	25	308	4,228
Municipal Contagious Disease Hospital	Unit of Kansas City General Hospital						374
Neurological Hospital†	N&M	NPA'ssn	36	28			152
Ralph Sanitarium	Drug	Indiv	17	10			10
Research Hospital†	Gen	NPA'ssn	211	187	40	906	6,483
St Joseph Hospital†	Gen	Church	206	230	40	1,636	9,034
St Luke's Hospital†	Gen	Church	240	236	38	1,204	6,721
St Mary's Hospital†	Gen	Church	150	148	32	1,013	5,600
St Vincent's Hospital	Mat	Church	37	23	30	644	3,618
Trinity Lutheran Hospital†	Gen	Church	110	99	24	096	3,000
Wheatley Provident Hospital	Gen	NPA'ssn	67	43	5	156	1,280
Willows Maternity Sanit	Mat	Indiv	70	46	75	189	228
Kennett, 6,335—Dunklin Presnell Hospital	Gen	Part	40	25	12	141	1,436
Kirksville, 10,080—Adair Grim Smith Hosp and Clinic	Gen	Corp	38	32	6	90	1,426
Stekler Hospital	Gen	Corp	20	10	6	30	306
Kirkwood, 12,132—St Louis Oakland Park Hospital	N&M	Corp	12	8			17
U S Marine Hospital†	Gen	USPHS	144	115			1,402
Koch, 900—St Louis Robert Koch Hospital†	TB	City	688	450			367
Lebanon, 5,020—Laclede Louise G Wallace Hospital	Gen	NPA'ssn	24	27	5	277	1,010
Little Blue, 50—Jackson Rural Jackson County Emergency Hospital	Gen	County	25	15	9	90	338
Louisiana, 4,600—Pike Pike County Hospital	Gen	County	54	30	11	141	1,115
Marshall, 8,033—Saline Georgia Brown Blosser Home for Crippled Children	Orth	NPA'ssn	60	27			221
John Fitzgibbon Memorial Hospital	Gen	NPA'ssn	40	21	12	165	969
Maryville, 5,700—Nodaway St Francis Hospital†	Gen	Church	100	63	20	406	2,623
Mexico, 9,033—Audrain Audrain Hospital†	Gen	County	56	28	18	278	1,537
Moberly, 12,920—Randolph McCormick Hospital	Gen	Indiv	35	21	5	101	499
Wabash Employes' Hosp †	Indus	NPA'ssn	35	21			425
Woodland Hospital	Gen	Corp	30	20	5	78	793
Mount Vernon, 1,682—Lawrence Missouri State Sanatorium†	TB	State	780	634			605
Nesho, 5,338—Newton Sale Bowman Hospital	Gen	Part	40	5	12	280	1,572
Nevada, 8,181—Vernon Nevada Hospital	Gen	City	30	21	6	197	882
State Hospital No 7†	Ment	State	2,180	2,057			378
Poplar Bluff, 11,163—Butler Brandon Hospital	Gen	Indiv	40	12	4	31	460
Lucy Lee Hospital	Gen	Indiv	28	24	10	243	1,140
Poplar Bluff Hospital	Gen	Indiv	70	44	10	219	2,016
Robertson, 300—St Louis Jewish Sanatorium	TB	NPA'ssn	108	50			34
Rolla, 5,141—Phelps Missouri Trachoma Hospital	Trach	State	65	32			390
Nelle McFarland Memorial Hospital	Gen	Indiv	66	28	10	101	1,109
St Charles, 10,803—St Charles St Joseph's Hospital†	Gen	Church	55	43	17	486	1,914
St James, 1,812—Phelps St James Hospital	Gen	Indiv	15	0	7	110	206
St Joseph, 70,711—Buchanan Missouri Methodist Hosp ††	Gen	Church	170	127	20	619	5,190
St Joseph's Hospital†	Gen	Church	148	83	20	467	3,260
State Hospital No 2†	Ment	State	2,806	2,600			499
St Louis, 816,048—St Louis City Alevan Brothers Hosp †	Gen	Church	176	120			1,976
Barnard Free Skin and Cancer Hospital†	Sk.Cancer	NPA'ssn	44	31			787
Barnes Hospital†	Gen	Church	555	361			11,845
Bethesda General Hospital†	Gen	NPA'ssn	100	60	20	762	1,400
Christian Hospital†	Gen	NPA'ssn	110	91	20	870	201
City Isolation Hospital†	Isol	City	200	76			1,818
City Sanitarium†	Ment	City	3,500	3,373			691
De Paul Hospital†	Gen	Church	295	270	61	1,000	12,000
Evangelical Deaconess Home and Hospital†	Gen	Church	23	190	40	1,201	8,107
Faith Hospital	Gen	NPA'ssn	23	18	12	100	772
Firmen Desloge Hospital†	Unit of St Mary's Group of Hospitals	NPA'ssn	80	54			1,652
Priceo Employes' Hospital†	Indus	NPA'ssn					

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Homer G. Phillips Hosp.†††††	Gen	City	710	528	40	1,500	9,955
Jewish Hospital†††††	Gen	NPAAssn	270	210	33	828	6,992
Josephine Heitkamp Memorial Hospital†††††	Gen	Church	45	40	20	531	1,875
Lutheran Hospital†††††	Gen	Church	162	142	30	1,066	5,156
McMillan Hospital†††††	Unit of Barnes Hospital						
Missouri Baptist Hosp.†††††	Gen	Church	450	330	50	1,016	9,747
Missouri Pacific Hospital†††††	Indus	NPAAssn	300	173	..	..	5,432
Mount St. Rose Sanat.†††††	Unit of St. Mary's Group of Hospitals						
Park Lane Memorial Hosp.†††††	Gen	NPAAssn	125	80	30	658	3,225
Peoples Hospital†††††	Gen	NPAAssn	51	41	6	124	1,196
Robert Koch Hospital†††††	See Koch, Missouri						
St. Ann's Lyng-In Hospital†††††	Mat	Church	30	13	40	65	107
St. Anthony's Hospital†††††	Gen	Church	220	166	60	1,973	6,266
St. John's Hospital†††††	Gen	Church	314	273	56	1,349	7,999
St. Louis Children's Hosp.†††††	Chil	NPAAssn	195	126	..	..	3,877
St. Louis City Hospital†††††	Gen	City	1,037	662	67	1,126	13,884
St. Louis Maternity Hosp.†††††	Mat	NPAAssn	98	68	98	2,073	2,410
St. Luke's Hospital†††††	Gen	Church	174	154	32	775	5,801
St. Mary's Group of Hospitals†††††	Gen	Tb Church	673	683	88	2,509	15,564
St. Mary's Hospital†††††	Unit of St. Mary's Group of Hospitals						
St. Mary's Infirmary†††††	Gen	Church	141	117	25	536	3,288
St. Vincent's Sanitarium†††††	N&M	Church	250	210	..	..	298
Shriners Hospital for Crippled Children†††††	Orth	NPAAssn	100	71	..	..	311
U. S. Naval Air Station Dispensary†††††	Gen	Navy	78	..	..	..	Estab. 1913
Sedalia, 20,428—Pettis Hospital†††††	Gen	City	60	43	15	415	1,819
St. Joseph, 7,944—Scott Hospital†††††	Gen	City	17	17	12	360	1,500
St. Joseph General Hospital†††††	Gen	City	17	17	12	360	1,500
Smithville, 772—Chay Smithville Community Hosp.†††††	Gen	NPAAssn	21	8	10	71	325
Springfield, 61,238—Greene Burge Hospital†††††	Gen	Church	85	58	20	650	2,513
City Hospital†††††	Gen	City	20	10	5	148	755
Medical Center for Federal Prisoners†††††	Gen	Fed	996	900	..	..	553
St. John's Hospital†††††	Gen	Church	100	91	25	778	3,254
Springfield Baptist Hosp.†††††	Gen	NPAAssn	80	51	10	238	2,199
Trenton, 7,046—Grundy Cullers Hospital†††††	Gen	Indiv	20	8	6	60	360
Wright Memorial Hospital†††††	Gen	NPAAssn	18	9	4	92	602
Warrensburg, 5,868—Johnson Warrensburg Clinic Hospital†††††	Gen	Part	16	12	6	183	823
Washington, 6,759—Franklin St. Francis Hospital†††††	Gen	Church	40	38	10	342	1,189
Webb City, 7,663—Jasper Jasper County Tuberculosis Hospital†††††	Tb	County	115	78	..	..	140
Webster Groves, 18,394—St. Louis Glenwood Sanatorium†††††	N&M	Corp	73	53	..	..	131
West Plains, 4,026—Howell Christa Hogan Hospital†††††	Gen	Indiv	16	10	1	80	330

Related Institutions

Independence, 16,006—Jackson Vail Sanitarium†††††	Conv	Indiv	25	18	..	..	18
Kansas City, 3,927—Jackson Florence Crittenton Home†††††	Mat	NPAAssn	19	15	18	19	46
Florence Home for Colored Girls†††††	Mat	NPAAssn	50	25	6	73	84
Trowbridge Training School for Nervous and Backward Children†††††	MeDe	Indiv	30	20	..	..	39
Liberty, 3,598—Chay Missouri Odd Fellows Home Hospital†††††	Inst	NPAAssn	65	38	..	..	38
Marshall, 6,531—Saline Missouri State School—Epilepsy and Feeble-minded†††††	MeDe	State	1,700	1,614	..	..	129
Marthasville, 321—Warren Evangelical Emmaus Home for Epileptics and Feeble-minded†††††	MeDe	Church	100	98	..	..	5
Mountain Grove, 2,431—Wright Ryan Hospital†††††	Gen	Indiv	12	12	3	36	87
Rolla, 5,141—Phelps Missouri School of Mines Hospital†††††	Inst	State	17	2	..	..	215
St. Charles, 10,803—St. Charles Evangelical Emmaus Home for Epileptics and Feeble-minded†††††	MeDe	Church	150	143	..	..	10
St. James, 1,612—Phelps State Federal Soldiers Home Hospital†††††	Inst	State	56	23	..	..	92
St. Louis, 816,048—St. Louis City Booth Memorial Hospital†††††	Mat	Church	60	28	30	275	381
City Infirmary†††††	Inst	City	899	761	..	..	350
Hospital of Masonic Home†††††	Inst	NPAAssn	123	59	..	..	264
Mother of Good Counsel Home and Hospital†††††	Cancer	Church	75	73	..	..	157
St. Louis Training School†††††	MeDe	City	525	443	..	..	68
Valley Park, 2,001—St. Louis Ridge Farm†††††	Unit of St. Louis Children's Hospital						
West Plains, 4,026—Howell Cottage Hospital†††††	Gen	Indiv	7	3	5	72	82

MONTANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Annaconda, 11,001—Deer Lodge St. Ann's Hospital†††††	Gen	Church	80	63	18	385	1,309
Billings, 23,261—Yellowstone Billings Deaconess Hosp.†††††	Gen	Church	78	67	25	597	2,736
St. Vincent Hospital†††††	Gen	Orth Church	165	118	28	621	4,967
Bozeman, 8,655—Gallatin Bozeman Deaconess Hosp.†††††	Gen	Church	52	46	13	313	1,816
Browning, 1,825—Glaeser Blackfoot Hospital†††††	Gen	IA	45	37	8	152	1,106
Butte, 37,081—Silver Bow Murray Hospital†††††	Gen	Corp	100	77	20	354	2,785
St. James Hospital†††††	Gen	Church	200	93	26	667	3,210
Silver Bow County Hosp.†††††	Gen	Inst County	130	92	8	25	347
Choteau, 1,181—Teton Choteau Hospital†††††	Gen	Indiv	18	11	4	22	133
Conrad, 1,471—Pondera St. Mary's Hospital†††††	Gen	Church	58	28	10	117	987
Crow Agency, 900—Big Horn Crow Agency Hospital†††††	Gen	IA	36	18	4	63	633
Deer Lodge, 3,278—Powell Montana State Tuberculosis Sanitarium†††††	Tb	State	260	251	..	..	212
St. Joseph Hospital†††††	Gen	Church	40	33	10	99	477
Dillon, 3,011—Beaverhead Barrett Hospital†††††	Gen	NPAAssn	22	9	6	72	492
Eureka, 912—Lincoln Clark's Hospital†††††	Gen	Indiv	9	4	5	32	150
Forsyth, 2,626—Rosebud Rosebud Community Hosp.†††††	Gen	Church	30	12	7	83	338
Fort Benton, 1,227—Chouteau St. Clare Hospital†††††	Gen	Church	40	20	6	44	421
Fort Harrison, 300—Lewis and Clark Veterans Admin. Facility†††††	Gen	Vet	148	105	..	..	1,049
Fort Peck, 1,500—Valley Fort Peck Hospital†††††	Gen	Fed	30	5	2	3	342
Glasgow, 3,790—Valley Frances Mahon Deaconess Hospital†††††	Gen	Church	60	28	12	218	1,136
Glendive, 4,534—Dawson Dawson County Hospital†††††	Gen	County	25	14	5	27	169
Northern Pacific Hospital†††††	Gen	NPAAssn	61	38	10	205	2,091
Great Falls, 29,928—Cascade Columbus Hospital†††††	Gen	Church	225	157	50	620	4,919
Montana Deaconess Hosp.†††††	Gen	Church	191	126	34	643	4,000
Hamilton, 2,332—Ravalli Marcus Daly Memorial Hosp.†††††	Gen	NPAAssn	32	23	13	234	846
Hardin, 1,886—Big Horn Hardin General Hospital†††††	Gen	Corp	25	6	5	42	241
Harlem, 1,166—Blaine Fort Belknap Indian Hospital and Sanitarium†††††	Gen	IA	47	29	8	91	845
Hayre, 6,427—Hill Kennedy Deaconess Hospital†††††	Gen	Church	58	32	14	142	1,332
Sacred Heart Hospital†††††	Gen	Church	125	76	14	226	2,338
Helena, 15,056—Lewis and Clark St. John Hospital†††††	Gen	Church	85	44	15	270	1,592
St. Peter's Hospital†††††	Gen	NPAAssn	63	40	10	170	1,173
Shodair Crippled Children's Hospital†††††	Orth	NPAAssn	52	20	..	..	225
Jordan, 500—Garfield Lutheran Good Samaritan Hospital†††††	Gen	Church	20	11	4	47	241
Kaliispell, 8,245—Flathead Kaliispell General Hospital†††††	Gen	Church	43	28	14	269	1,305
Lame Deer, 350—Rosebud Tongue River Agency Hosp.†††††	Gen	IA	47	23	6	28	852
Lewistown, 5,874—Fergus St. Joseph's Hospital†††††	Gen	Church	120	75	17	264	3,140
Libby, 1,837—Lincoln Libby General Hospital†††††	Gen	Indiv	15	12	4	60	350
Livingston, 6,642—Park Park Hospital†††††	Gen	Indiv	27	15	6	130	576
Miles City, 7,313—Custer Miles City Hospital (Holy Rosary Hospital)†††††	Gen	Church	120	75	15	254	2,350
Missoula, 18,449—Missoula Northern Pacific Beneficial Association Hospital†††††	Indus	NPAAssn	76	51	..	..	1,888
St. Patrick Hospital†††††	Gen	Church	124	100	25	520	3,564
Thornton Hospital†††††	Gen	Part	38	27	12	249	1,312
Plentywood, Sherida†††††	Gen	NPAAssn	16	14	5	106	542
Poplar, Fort Peck Indian Agency Hospital†††††	Gen	IA	23	17	7	75	620
Roundup, 2,644—Musselshell Musselshell Valley Hospital†††††	Gen	Indiv	20	10	6	74	365
St. Ignace 768—Lake Holy Family Hospital†††††	Gen	Church	42	25	6	100	878
Sidney, 2,978—Richland Sidney General Hospital†††††	Gen	Church	30	22	10	108	1,310
Townsend Broadwater†††††	Gen	Corp	28	17	5	85	458
Warm Springs, Montana†††††	Ment	State	1,920	1,920	..	..	442
Whitefish, 2,602—Flathead Whitefish Hospital†††††	Gen	Indiv	17	11	6	84	534
Wolf Point, 1,960—Roosevelt Lutheran Trinity Hospital†††††	Gen	NPAAssn	18	15	8	92	445

MONTANA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Billings, 23,261—Yellowstone Yellowstone County Hospital. Gen	County	County	51	27	6	12	187
Great Falls, 29,928—Cascade Detention Hospital. Iso	County	County	28	7	..	...	202
Helena, 15,036—Lewis and Clark Lewis and Clark County Hos- pital. GenInst	County	County	75	62	2	2	100
Lewistown, 5,874—Fergus Fergus County Hospital. Gen	County	County	17	11	4	6	134
Polson, 2,156—Lake Hotel Dieu Hospital. Gen	Church	Church	20	16	5	42	280
Scobey, 1,311—Daniel's Scobey Clinic Hospital. Gen	Indiv	Indiv	15	10	4	60	187
Terry, 1,012—Prairie Lutheran Good Samaritan Hospital. Gen	Church	Church	15	10	6	52	275

NEBRASKA

Hospitals and Sanatoriums

Ainsworth, 1,833—Brown Ainsworth Hospital. Gen	Part	25	14	5	187	912
Alliance, 6,253—Box Butte St. Joseph's Hospital. Gen	Church	105	76	22	351	2,507
Auburn, 3,639—Nemaha Auburn Hospital. Gen	Indiv	15	5	5	64	285
Tushla General Hospital. Gen	Indiv	15	7	5	64	341
Aurora, 2,419—Hamilton Aurora Hospital. Gen	Indiv	16	10	8	100	405
Bassett, 931—Rock Bassett Hospital. Gen	Part	12	6	6	59	338
Beatrice, 10,883—Gage Lutheran Hospital. Gen	Church	45	39	14	304	1,490
Mennonite Deaconess Home and Hospital. Gen	Church	30	26	10	147	827
Benkelman, 1,448—Dundy Morehouse Hospital. Gen	Indiv	10	7	4	61	372
Blair, 3,359—Washington Blair Hospital. Gen	Indiv	12	10	4	118	470
Broken Bow, 2,968—Custer Broken Bow Hospital. Gen	Indiv	35	12	4	44	638
Cambridge, 1,084—Furnas Republican Valley Hospital. Gen	Indiv	25	7	3	31	157
Chadron, 4,262—Dawes Chadron Municipal Hospital. Gen	City	26	16	7	136	696
Columbus, 7,632—Platte Lutheran Hospital. Gen	Church	30	18	5	173	602
St. Mary's Hospital. Gen	Church	135	54	10	230	1,160
Dalton, 358—Cheyenne Pioneer Memorial Hospital. Gen	Indiv	10	3	4	58	227
David City, 2,272—Butler David City Hospital. Gen	NPAasn	12	7	6	123	297
Fairbury, 6,304—Jefferson Fairbury Hospital. Gen	Indiv	15	9	4	...	482
Falls City, 6,146—Richardson Our Lady of Perpetual Help Hospital. Gen	Church	35	18	8	...	659
Fort Crook, —Sargy Station Hospital. Gen	Army	50	32	..	...	603
Fremont, 11,862—Dodge Dodge County Hospital. Gen	County	55	31	18	378	1,438
Friend, 1,169—Saline Warren Memorial Hospital. Gen	City	15	9	5	84	258
Genoa, 1,231—Nance Emergency Hospital. Gen	Part	7	3	3	47	105
Genoa Hospital. Gen	Indiv	11	5	3	51	141
Gordon, 1,967—Sheridan City Hospital. Gen	Indiv	10	...	4	Estab. 1943	
Grand Island, 19,130—Hall Grand Island Lutheran Hosp. Gen	Church	35	26	12	267	1,183
St. Francis Hospital. Gen	Church	141	81	19	351	2,335
Hastings, 15,145—Adams Mary Lanning Memorial Hos- pital. Gen	NPAasn	90	77	15	661	3,260
Hebron, 1,909—Thayer Blue Valley Hospital. Gen	Indiv	20	8	5	40	320
Holdrege, 3,360—Phelps Holdrege Hospital. Gen	Part	18	11	5	65	541
Humboldt, 1,380—Richardson Humboldt Hospital. Gen	Indiv	14	10	4	88	406
Imperial, 1,195—Chase Imperial Community Hosp. Gen	NPAasn	18	10	6	136	447
Ingleside, 1,699—Adams Hastings State Hospital. Gen	State	1,760	1,760	..	...	244
Kearney, 9,643—Buffalo Good Samaritan Hospital. Gen	Church	60	46	12	434	1,791
Hospital for the Tuberculous TB	State	200	160	...	...	148
Kimball, 1,725—Kimball Flett Hospital. Gen	Indiv	10	6	5	89	420
Lewellen, 532—Garden Lewellen Community Hosp. Gen	NPAasn	12	...	4	Estab. 1943	
Lexington Community Hosp. Gen	Corp	25	10	9	186	514
Lincoln, 81,984—Lancaster Bryan Memorial Hospital. Gen	Church	100	86	24	461	2,527
Green Gables, Dr. Benj. F. Bailey Sanatorium. Gen	Corp	115	83	4	14	340
Lincoln General Hospital. Gen	NPAasn	183	151	30	625	4,574

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Lincoln State Hospital▲.....	Ment	State	1,440	1,415	..	...	225
Nebraska Orthopedic Hosp.†▲	Orth	State	110	98	..	...	635
St. Elizabeth Hospital▲▲○.....	Gen	Church	200	144	30	854	5,878
Veterans Admin. Facility▲.....	Gen	Vet	251	185	..	...	1,854
Loup City, 1,675—Sherman							
Loup City Hospital.....	Gen	Indiv	17	12	6	126	486
Lynch, 487—Boyd							
Sacred Heart Hospital.....	Gen	Church	21	10	6	86	438
McCook, 6,212—Red Willow							
St. Catherine of Sienna Hos- pital▲	Gen	Church	50	30	14	239	1,576
Nebraska City, 7,339—Otoe	Gen	Indiv	16	7	10	95	261
St. Mary's Hospital.....	Gen	Church	67	43	13	260	1,208
Norfolk, 10,490—Madison							
Lutheran Hospital.....	Gen	Church	60	31	15	286	1,592
Norfolk State Hospital†▲.....	Ment	State	1,120	1,153	..	...	180
Our Lady of Lourdes Hosp. Gen.	Gen	Church	34	26	10	203	1,037
Verges Sanitarium.....	Gen	Indiv	30	18	6	64	457
North Platte, 12,420—Lincoln							
St. Mary Hospital.....	Gen	Church	67	39	13	298	1,699
Oakland, 1,380—Burt							
Oakland Community Hosp... Gen	Gen	Indiv	12	6	4	84	272
Odell, 404—Gage							
Odell General Hospital.....	Gen	Indiv	10	7	5	78	366
Omaha, 223,844—Douglas							
Bishop Clarkson Memorial Hos- pital▲▲○	Gen	Church	143	127	17	425	4,454
Creighton Memorial St. Joseph's Hospital▲▲○	Gen	Church	425	334	50	1,520	11,419
Doctor's Hospital.....	Gen	NPAasn	90	68	12	297	3,163
Douglas County Hospital†▲. Gen	Gen	County	400	291	9	68	2,216
Douglas County Psychiatric Hospital.....	Unit of Douglas County Hospital						
Immanuel Deaconess Insti- tute▲▲○	Gen	Church	123	110	38	771	3,949
Lutheran Hospital▲	Gen	Church	110	90	17	512	3,248
Nebraska Methodist Hospital and Deaconess Home▲▲○... Gen	Gen	Church	141	143	24	815	5,280
St. Catherine's Hospital▲▲○. Gen	Gen	Church	165	132	36	715	5,505
University of Nebraska Hos- pital▲▲○	Gen	State	210	163	20	334	2,849
Ord, 2,240—Valley							
Ord Hospital.....	Gen	Indiv	15	9	4	39	288
Oxford, 1,141—Furnas							
Oxford General Hospital.....	Gen	Corp	15	9	5	97	345
Pawnee City, 1,647—Pawnee							
Pawnee Hospital and Maternity Annex.....	Gen	Indiv	26	21	5	107	537
Pender, 1,135—Thurston							
Logan Valley Hospital.....	Gen	City	12	...	6	Reorganized	
Rushville, 1,125—Sheridan							
Rushville Hospital.....	Gen	Indiv	10	5	4	49	360
Scottsbluff, 12,057—Scotts Bluff							
Fairacres Hospital.....	Gen	Indiv	30	28	10	335	1,592
West Nebraska Methodist Hos- pital○	Gen	Church	50	41	12	450	2,260
Seward, 2,836—Seward							
Seward Hospital.....	Gen	Indiv	10	6	6	92	299
Sidney, 3,388—Cheyenne							
Roche Hospital.....	Gen	Indiv	18	15	5	61	626
Taylor Hospital.....	Gen	Part	20	13	5	105	708
Stratton, 630—Hitchcock							
Stewart Hospital.....	Gen	Indiv	12	5	3	30	203
Stromsburg, 1,127—Polk							
Stromsburg Hospital.....	Gen	Indiv	12	7	4	75	366
Stuart, 760—Holt							
Wilson Hospital.....	Gen	Indiv	20	10	3	60	346
Superior, 2,650—Nuckolls							
Brodstone Memorial Hospital Gen	Gen	NPAasn	30	10	6	59	338
Valentine, 2,188—Cherry							
General Hospital.....	Gen	Indiv	15	9	7	99	619
Wahoo, 2,648—Saunders							
Wahoo Community Hospital Gen	Gen	Indiv	20	11	10	148	715
Wakefield, 961—Dixon							
Coe Hospital.....	Gen	Indiv	9	3	5	37	146
Winnebago, 800—Thurston							
Winnebago Indian Hospital.. Gen	Gen	IA	54	30	9	74	941
York, 5,383—York							
Lutheran Hospital.....	Gen	Church	50	22	10	194	1,078
Related Institutions							
Bentrice, 10,883—Gage							
Nebraska Institution for Feeble- minded.....	MeDe	State	1,512	1,499	..	...	109
Lincoln, 81,984—Lancaster							
Nebraska State Penitentiary Hospital.....	Inst	State	25	9	..	...	359
Milford, 759—Seward							
Nebraska Industrial Home... Inst	Inst	State	18	3	12	55	56
Omaha, 223,844—Douglas							
City Emergency Hospital.... Iso	Iso	City	40	9	..	...	172
Salvation Army Booth Memo- rial Hospital.....	Mat	Church	77	27	18	102	119
Orchard, 493—Antelope							
Orchard Hospital.....	Gen	Indiv	7	1	3	39	116
Plainview, 1,411—Pierce							
Plainview General Hospital... Gen	Gen	NPAasn	8	2	2	81	282

Related Institutions

Beatrice, 10,883—Gage Nebraska Institution for Feeble- minded. MeDe	State	1,512	1,499	..	...	109
Lincoln, 81,984—Lancaster Nebraska State Penitentiary Hospital. Inst	State	25	9	..	...	329
Milford, 759—Seward Nebraska Industrial Home. Inst	State	18	3	12	55	26
Omaha, 223,844—Douglas City Emergency Hospital. Iso	City	40	9	..	...	172
Salvation Army Booth Memo- rial Hospital. Mat	Church	77	27	18	102	119
Orchard, 493—Antelope Orchard Hospital. Gen	Indiv	7	1	3	59	116
Plainview, 1,411—Pierce Plainview General Hospital. Gen	NPAasn	8	2	2	81	221

NEBRASKA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Sutherland, 862—Lincoln							
Sutherland Hospital	Gen	NPAasn	10	3	6	56	296
Tecumseh, 2,101—Johnson							
Tecumseh Hospital	Gen	Indiv	10	5	1	60	170
Tilden, 184—Madison							
Tilden Hospital	Gen	Indiv	10	5	4	62	288
Walthill, 1,204—Thurston							
Dr. Plottie Memorial Hosp. ..	Gen	Indiv	20	6	1	8	13
Westpoint, 2,510—Cumling							
St. Joseph Home and Hos- pital	InstGen	Church	22	18	6	147	628

NEVADA

Hospitals and Sanatoriums

Callente, 1,800—Lincoln							
Lincoln County Hospital....	Gen	County	15	10	1	66	281
East Ely, 750—White Pine							
Stephens Valley Hospital....	Gen	NPAasn	40	15	7	122	402
Elko, 4,691—Elko							
Elko General Hospital....	Gen	County	50	21	12	110	720
Ely, 4,140—White Pine							
White Pine General Hospital..	Gen	County	50	17	10	52	359
Fallon, 1,911—Churchill							
Handley Hospital	Gen	Part	24	12	6	21	581
Las Vegas, 8,422—Clark							
Las Vegas Hospital	Gen	Part	60	31	16	212	1,656
Reno, 21,317—Washoe							
Nevada State Hospital for Mental Diseases	Ment	State	350	491	..	..	60
St. Mary's Hospital	Gen	Church	75	61	15	570	2,115
Veterans Adm'n. Facility....	Gen	Vet	26	19	..	..	251
Washoe County General Hosp..	Gen	County	216	182	18	412	3,011
Schurz, 100—Mineral							
Walker River Indian Hosp... Gen	IA		31	22	3	33	487
Stewart, 500—Ormsby							
Carson Agency Hospital....	Gen	IA	..	21	4	32	483
Tonopah, 1,700—Nye							
Tonopah Mines Hospital....	Gen	NPAasn	20	10	3	70	100
Winnemucca, 2,485—Humboldt							
Humboldt County General Hos- pital	Gen	County	90	42	14	126	1,218

Related Institutions

Owyhee, 100—Elko							
Western Shoshone Hospital..	Gen	IA	21	15	6	56	480
Stewart, 500—Ormsby							
Carson Indian School Hosp. Inst	IA		21	12	..	..	417

NEW HAMPSHIRE

Hospitals and Sanatoriums

Berlin, 19,081—Coos							
St. Louis Hospital....	Gen	Church	90	60	15	314	1,950
Claremont, 12,144—Sullivan							
Claremont General Hospital..	Gen	NPAasn	59	31	14	342	1,278
Concord, 27,171—Merrimack							
Margaret Pillsbury General Hospital....	Gen	NPAasn	107	60	18	189	1,682
New Hampshire Memorial Hos- pital....	Gen	NPAasn	75	59	16	382	1,461
New Hampshire State Hospi- tal....	Ment	State	2,350	2,287	..	..	700
Dover, 14,900—Strafford							
Wentworth Hospital....	Gen	City	69	45	15	305	1,557
East Derry, —Rockingham							
Alexander-Eastman Hospital..	Gen	NPAasn	23	11	8	90	397
Eppling, 1,618—Rockingham							
Mitchell Memorial Hospital..	Gen	County	50	20	12	87	436
Exeter, 5,398—Rockingham							
Exeter Hospital....	Gen	NPAasn	73	38	22	107	1,480
Franklin, 6,749—Merrimack							
Franklin Hospital	Gen	NPAasn	50	24	15	159	997
Glenciff, 200—Grafton							
New Hampshire State Sanat.▲	TB	State	140	105	..	..	58
Granmere, 200—Hillsboro							
Hillsborough County General Hospital....	Gen	County	118	85	14	160	1,442
Hanover, 3,125—Grafton							
Mary Hitchcock Memorial Hos- pital....	Gen	NPAasn	178	156	18	378	5,119
Keene, 13, —							
Elliot	Gen	NPAasn	85	58	15	477	2,162
Laconia, —							
Lacon	Gen	NPAasn	89	77	25	433	2,569
Lacon							
Lacon	Gen	NPAasn	20	13	4	112	484
Lebanon, —							
Alce	Gen	NPAasn	19	10	12	192	311
Littleton, 1,571—Grafton							
Littleton Hospital	Gen	NPAasn	55	22	12	130	680
Manchester, 77,685—Hillsboro							
Unit of Elliot Hospital							
Baleh Hospital	Gen	NPAasn	122	76	32	788	2,681
Elliot Hospital....							
Notre Dame de Lourdes Hos- pital....	Gen	Church	108	75	20	508	2,580

NEW HAMPSHIRE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Our Lady of Perpetual Help Maternity Hospital	Unit of Sacred Heart Hospital						
Sacred Heart Hospital....	Gen	Church	143	98	20	419	2,561
Nashua, 32,027—Hillsboro							
Nashua Memorial Hospital....	Gen	NPAasn	84	77	16	366	4,728
St. Joseph's Hospital....	Gen	Church	89	66	18	458	2,312
New London, 1,039—Merrimack							
New London Hospital	Gen	NPAasn	25	12	6	63	335
Newport, 5,304—Sullivan							
Carrie F. Wright Hospital....	Gen	NPAasn	25	...	...	...	No data supplied
North Conway, 900—Carroll							
Memorial Hospital	Gen	NPAasn	37	23	10	135	926
Pembroke (Suncook P.O.), 50—Merrimack							
Pembroke Sanatorium	TB	Corp	100	65	..	..	91
Peterborough, 2,470—Hillsboro							
Peterborough Hospital....	Gen	NPAasn	30	27	10	158	956
Plymouth, 2,531—Grafton							
Severa Spence Memorial Hosp. Gen	Gen	NPAasn	30	22	8	118	824
Portsmouth, 14,821—Rockingham							
Portsmouth Hospital....	Gen	NPAasn	112	65	24	698	3,263
U. S. Naval Hospital....	Gen	Navy	350	168	9	52	2,431
Rochester, 12,012—Strafford							
Trisble Memorial Hospital..	Gen	NPAasn	60	47	20	531	2,520
West Stewartstown, 350—Coos							
Coos County Hospital	Gen	County	50	17	5	85	458
Whitefield, 1,811—Coos							
Morrison Hospital	Gen	NPAasn	50	14	8	35	225
Wolfeboro, 2,636—Carroll							
Huggins Hospital....	Gen	NPAasn	36	23	6	106	913
Woodsville, 1,900—Grafton							
Cottage Hospital	Gen	NPAasn	28	16	8	116	589
Grafton County Hospital....	InstGen	County	32	18	4	6	347

Related Institutions

Eppling, 1,618—Rockingham							
Rockingham County Farm Hospital	Inst	County	62	56	..	..	123
Exeter, 5,398—Rockingham							
Lamont Infirmary	Inst	NPAasn	53	10	..	..	977
Laconia, 13,481—Belknap							
Laconia State School	MeDe	State	740	673	..	..	100
Manchester, 77,685—Hillsboro							
Manchester Isolation Hosp... Iso	City		67	7	..	..	118

NEW JERSEY

Hospitals and Sanatoriums

Allentown, 766—Monmouth							
Dr. Farmer's Private Hosp... Gen	Indiv		30	19	6	116	799
Allenwood, 150—Monmouth							
Allenwood Sanatorium and Monmouth County Hospital for Tuberculosis	TB	County	100	94	..	..	102
Atlantic City, 64,091—Atlantic							
Atlantic City Hospital*▲▲	Gen	NPAasn	260	194	40	1,135	6,848
Children's Seashore House at Atlantic City for Invalid Children	Orth	NPAasn	180	120	..	..	991
Municipal Hospital	Iso	City	40	4	..	..	70
U. S. Naval Air Station Dis- pensary	Gen	Navy	75	...	..	..	Estab. 1943
Bayonne, 79,108—Hudson							
Bayonne Hospital and Dis- pensary*▲▲	Gen	NPAasn	220	147	30	981	4,292
Swiney Sanatorium	Gen	Indiv	16	7	6	88	293
Beach Haven, 746—Ocean							
Seashore Branch of Babies' Hospital	Unit of Babies' Hospital, Philadelphia, Pa.						
Bellemend, 51—Somerset							
Belle Mead Sanat. and Farm. N&M Corp		Corp	73	51	..	..	104
Belleville, 28,167—Essex							
Essex County Hospital for Contagious Diseases*▲▲	Iso	County	510	126	..	..	2,950
Bound Brook, 7,616—Somerset							
Bound Brook Hospital....	Gen	NPAasn	34	15	10	103	641
Bridgeton, 15,992—Cumberland							
Bridgeton Hospital....	Gen	NPAasn	93	53	22	558	2,155
Ivy Hall Sanitarium	Conv	Indiv	25	22	..	..	28
Browns Mills, 500—Burlington							
Deborah Sanatorium	TB	NPAasn	77	67	..	..	75
Camden, 117,536—Camden							
Cooper Hospital*▲▲	Gen	NPAasn	348	279	93	2,270	8,634
Marion Childs Hospital for Children	Unit of West Jersey Homeopathic Hosp.						
Municipal Hospital for Con- tagious Diseases	Iso	City	100	16	..	..	315
West Jersey Homeopathic Hos- pital*▲▲	Gen	NPAasn	262	158	63	1,473	5,196
Cape May, 2,589—Cape May							
U. S. Naval Air Station Dis- pensary	Gen	Navy	59	...	..	..	Estab. 1943
Cedar Grove, 2,000—Essex							
Essex County Hospital....	Ment	County	2,611	2,467	..	..	661
Dover, 10,491—Morris							
Dover General Hospital....	Gen	NPAasn	104	89	26	730	3,260
Dumont, 7,556—Bergen							
Dumont Private Hospital....	Gen	Indiv	15	7	5	55	296
East Orange, 68,945—Essex							
East Orange General Hospi- tal*▲▲	Gen	NPAasn	120	91	30	752	3,162

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Elizabeth, 109,912—Union							
Alexian Brothers Hospital*▲, Gen	Church	163	133	..	...	2,790	
Elizabeth General Hospital and Dispensary*▲	Gen	NPAssn	206	152	44	1,307	4,859
.....	Gen	Church	213	163	59	1,364	4,488
.....	Gen	NPAssn	196	191	42	1,298	4,941
Fort Dix, —Burlington							
Station Hospital▲	Gen	Army	450	61	..	...	1,865
Fort Hancock, —Monmouth							
Station Hospital	Gen	Army	175	13	..	...	523
Fort Monmouth, —Monmouth							
Station Hospital▲	Gen	Army	54	18	4	21	830
Franklin, 4,009—Sussex							
Franklin Hospital▲	Gen	NPAssn	27	20	7	165	673
Glen Gardner, 536—Hunterdon							
New Jersey Sanatorium for Tuberculous Diseases*▲	TB	State	494	351	..	...	392
Glenloch, 800—Camden							
Camden County General Hospital	Gen	County	250	134	..	...	703
Camden County Hospital for Mental Diseases	Ment	County	750	800	..	...	188
Camden County Tuberculosis Hospital	TB	County	240	107	..	...	220
Greystone Park, —Morris							
New Jersey State Hosp.*▲, Ment	State	5,561	5,555	..	...	1,362	
Hackensack, 26,270—Bergen							
Hackensack Hospital*▲	Gen	NPAssn	250	257	42	1,964	9,353
Hasbrouck Heights, 6,716—Bergen							
Hasbrouck Heights Hospital, Orth	NPAssn	31	23	..	...	696	
Hoboken, 50,115—Hudson							
St. Mary's Hospital*▲	Gen	Church	375	257	25	777	6,207
Irrington, 55,328—Essex							
Irrington General Hospital▲, Gen	City	115	76	20	511	2,616	
Jersey City, 301,173—Hudson							
Christ Hospital*▲	Gen	Church	245	201	45	1,335	6,089
Fairmount Hospital	Gen	NPAssn	60	24	15	258	1,529
Greenville Hospital	Gen	NPAssn	60	60	16	229	1,329
Hudson County Tuberculosis Hospital▲	TB	County	500	440	..	...	575
Jersey City Hospital*▲	Gen	City	900	825	..	...	18,328
Jersey City Hospital for Communicable Diseases▲	Unit of Jersey City Hospital						
Margaret Hague Maternity Hospital*▲	Mat	County	345	237	385	7,130	8,422
Psychopathic Hospital	Unit of Jersey City Hospital						
St. Francis' Hospital*▲	Gen	Church	225	170	..	...	4,399
Kearny (Arlington P.O.), 39,407—Hudson							
West Hudson Hospital▲	Gen	NPAssn	64	53	20	557	2,306
Lakehurst, 827—Ocean							
U. S. Naval Air Station Dispensary	Gen	Navy	84	16	..	...	1,384
Lakewood, 8,000—Ocean							
Paul Kimball Hospital▲	Gen	NPAssn	64	43	11	294	1,451
Long Branch, 17,408—Monmouth							
Dr. E. C. Hazard Hospital...	Gen	NPAssn	95	63	30	313	3,779
Monmouth Memorial Hospital*▲	Gen	NPAssn	215	204	42	1,134	6,431
Lyons, —Somerset							
Veterans Admin. Facility▲...	Ment	Vet	1,925	1,716	..	...	926
Marlboro, 500—Monmouth							
New Jersey State Hospital*▲	Ment	State	2,792	2,691	..	...	758
Metuchen, 6,557—Middlesex							
Roosevelt Hospital▲	TbCancer	County	221	210	..	...	245
Midland Park, 4,525—Bergen							
Christian Sanatorium	N&M	NPAssn	192	179	..	...	117
Millville, 14,806—Cumberland							
Millville Hospital	Gen	NPAssn	56	29	15	315	1,245
Montclair, 30,807—Essex							
.....	▲ Gen	NPAssn	56	39	20	478	1,462
.....	▲▲ Gen	NPAssn	312	177	60	1,229	5,501
.....	▲ Gen	Church	58	41	12	383	1,528
M							
.....	Card	NPAssn	20	19	..	...	27
Morristown, 15,270—Morris							
All Souls Hospital*▲	Gen	Church	125	88	37	781	2,831
Aurora Institute	Conv	Corp	90	37	..	...	577
Morristown Memorial Hospital*▲	Gen	NPAssn	140	86	18	409	3,214
Shonghum Mountain Sanat., TB	County	76	71	..	...	60	
Mount Holly, 6,573—Burlington							
Burlington County Hosp.*▲	Gen	NPAssn	127	85	18	558	1,956
Neptune, 2,392—Monmouth							
Fittkin Memorial Hosp.*▲	Gen	NPAssn	150	122	39	1,054	4,231
Newark, 429,760—Essex							
American Legion Memorial Hospital	Gen	NPAssn	35	27	13	479	1,394
Babies' Hospital—Coit Memorial▲	Child	NPAssn	64	33	..	...	1,243
Columbus Hospital	Gen	NPAssn	75	54	32	1,115	2,878
Community Hospital▲	Gen	NPAssn	26	14	4	59	379
Hospital and Home for Crippled Children*▲	Orth	NPAssn	110	61	..	...	238
Hospital of St. Barnabas and for Women and Children*▲	Gen	Church	225	180	45	1,089	5,504
Newark Beth Israel Hosp.*▲	Gen	NPAssn	383	310	72	2,389	11,162
Newark City Hospital*▲	Gen	City	700	534	40	1,132	10,979
Newark Eye and Ear Infirmary*▲	ENT	NPAssn	65	29	..	...	2,300
Newark Memorial Hosp.*▲	Gen	NPAssn	104	73	26	478	2,663
Presbyterian Hospital▲	Gen	NPAssn	271	230	65	1,881	7,705
St. James Hospital*▲	Gen	Church	136	84	23	621	3,814
St. Michael's Hospital*▲	Gen	Church	350	300	70	1,732	9,802

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
New Brunswick, 33,180—Middlesex							
Middlesex General Hospital▲	Gen	NPAssn	110	61	25	663	2,192
St. Peter's General Hosp.*▲	Gen	Church	205	122	48	1,184	6,427
New Lisbon, 213—Burlington							
Fairview Sanatorium	TB	County	114	101	..	...	87
Newton, 5,533—Sussex							
Newton Memorial Hospital▲	Gen	NPAssn	42	39	9	333	1,335
Northfield, 2,848—Atlantic							
Atlantic County Hospital for Mental Diseases	Ment	County	475	356	..	...	178
Atlantic County Hospital for Tuberculous Diseases	TB	County	86	56	..	...	79
Orange, 35,717—Essex							
New Jersey Orthopaedic Hospital and Dispensary*▲	Orth	NPAssn	34	31	..	...	570
Orange Memorial Hospital*▲	Gen	NPAssn	364	239	75	1,794	8,002
St. Mary's Hospital*▲	Gen	Church	120	80	40	780	3,890
Passaic, 61,394—Passaic							
Beth Israel Hospital	Gen	NPAssn	78	45	22	483	1,925
Passaic General Hospital*▲	Gen	NPAssn	223	175	52	1,727	5,061
St. Mary's Hospital*▲	Gen	Church	187	177	50	1,282	5,808
Paterson, 139,656—Passaic							
Nathan and Miriam Barnert Memorial Hospital*▲	Gen	NPAssn	116	97	29	847	3,561
Paterson General Hosp.*▲	Gen	NPAssn	284	225	44	1,854	7,047
St. Joseph's Hospital*▲	Gen	Church	390	285	70	1,581	7,234
Valley View Sanatorium▲	TB	County	235	230	..	...	267
Perth Amboy, 41,242—Middlesex							
Perth Amboy General Hospital*▲	Gen	NPAssn	163	108	34	1,061	4,729
Pinevald (Bayville P.O.), —Ocean							
Royal Pines Hospital	Gen	NPAssn	85	30	12	77	424
Plainfield, 37,469—Union							
Muhlenberg Hospital*▲	Gen	NPAssn	270	193	60	1,755	6,136
Point Pleasant, 2,082—Ocean							
Point Pleasant Hospital▲	Gen	NPAssn	48	24	10	167	815
Preakness (Mountain View P.O.), —Passaic							
Hope Dell Hospital▲	Gen	County	417	412	..	...	187
Princeton, 7,719—Mercer							
Isabella McCosh Infirmary of Princeton University	Inst	NPAssn	54	18	..	...	1,285
Princeton Hospital▲	Gen	NPAssn	85	47	17	305	1,614
Rahway, 17,498—Union							
New Jersey Reformatory Hospital	Inst	State	19	5	..	...	219
Rahway Hospital▲	Gen	NPAssn	80	76	20	909	3,776
Red Bank, 10,974—Monmouth							
Riverview Hospital	Gen	NPAssn	30	23	18	290	1,215
Ridgewood, 14,948—Bergen							
Bergen Pines Bergen County Hospital▲	TbIso	County	476	300	..	...	741
Riverside, 4,000—Burlington							
Zurbrugg Memorial Hospital▲	Gen	NPAssn	41	37	15	347	1,466
Scotch Plains, 3,500—Union							
Bonnie Burn Sanatorium▲	TB	County	428	362	..	...	380
Secaucus, 9,751—Hudson							
Hudson County Contagious Disease Hospital▲	Iso	County	176	50	..	...	1,265
Hudson County Hospital	Gen	County	230	212	..	...	326
Hudson County Hospital for Mental Diseases▲	Ment	County	1,957	1,804	..	...	357
Skillman, 23—Somerset							
New Jersey State Village for Epileptics	Epil	State	1,563	1,493	..	...	88
Somers Point, 1,992—Atlantic							
Shore Memorial Hospital	Gen	NPAssn	65	22	9	82	986
Somerville, 8,720—Somerset							
Somerset Hospital▲	Gen	NPAssn	96	102	20	837	3,433
South Amboy, 7,802—Middlesex							
South Amboy Memorial Hosp.	Gen	NPAssn	35	32	12	432	1,114
Summit, 16,165—Union							
Fair Oaks Sanatorium	N&M	Corp	42	30	..	...	174
Overlook Hospital▲	N&M	NPAssn	152	119	38	908	3,933
Sussex, 1,478—Sussex							
Alexander Linn Hospital	Gen	NPAssn	20	12	5	99	458
Teaneck, 25,275—Bergen							
Holy Name Hospital*▲	Gen	Church	182	136	43	1,388	4,567
Trenton, 124,697—Mercer							
F. W. Donnelly Memorial Hospital	TbIso	City	445	287	..	...	489
Glenwood Sanitarium	N&M	Indiv	24	20	..	...	87
Mercer Hospital*▲	Gen	NPAssn	233	162	41	1,354	5,860
New Jersey State Hospital▲	Ment	State	3,000	2,970	..	...	856
New Jersey State Prison Hospital▲	Inst	State	42	26	..	...	520
Orthopaedic Hospital and Dispensary	Orth	NPAssn	45	28	..	...	227
St. Francis Hospital*▲	Gen	Church	300	256	55	1,410	7,450
Trenton General Hospital	Gen	NPAssn	50	30	11	183	860
William McKinley Memorial Hospital*▲	Gen	NPAssn	124	94	30	714	3,037
Union City, 56,173—Hudson							
Union City General Hospital	Gen	NPAssn	30	13	10	62	580
Verona, 8,957—Essex							
Essex Mountain Sanat.*▲	TB	County	446	351	..	...	463
Vineland, 7,914—Cumberland							
Newcomb Hospital▲	Gen	NPAssn	87	54	18	508	1,862
Weehawken (Union City P.O.), 14,363—Hudson							
North Hudson Hospital*▲	Gen	NPAssn	166	87	25	475	3,049
Westfield, 18,453—Union							
Children's Country Home▲	Orth	NPAssn	75	54	..	...	84
Woodbury, 8,306—Gloucester							
Underwood Hospital▲	Gen	NPAssn	60	65	20	594	2,220

NEW JERSEY—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Bridgeton, 15,992—Cumberland Cumberland County Hospital for Insane	Ment	County	300	247	..	...	40
Caldwell, 4,932—Essex Theresa Grotta Home for Con- valescents	CardConv	NPAasn	40	30	..	...	319
Farmingdale, 699—Monmouth Tuberculosis Preventorium for Children	TB	NPAasn	256	167	..	...	550
Haddonfield, 9,742—Camden Baneroff School	MeDe	NPAasn	130	98	..	...	93
Jamesburg, 2,128—Middlesex New Jersey State Home for Boys	Inst	State	24	9	..	...	750
Jersey City, 101,173—Hudson Salvation Army Door-of-Hope Home and Hospital	Mat	Church	70	57	7	55	111
Longport, 503—Atlantic Betty Bucharach Home for Afflicted Children	Orth	NPAasn	75	71	..	...	104
Maplewood, 2,113—Essex Newark City Almshouse	Inst	City	160	95	..	...	262
Menlo Park, 400—Middlesex New Jersey Home for Dis- abled Soldiers	Inst	State	84	40	..	...	58
Newark, 4,297—Essex Florence Crittenton Home	Mat	NPAasn	30	28	30	65	95
Newark Convalescent Hosp. Conv City	City	City	150	141	..	...	91
New Brunswick, 3,180—Middlesex Mary Kingsland Macy Willits Infirmary	Inst	State	22	1	..	...	149
Rutgers Infirmary	Inst	NPAasn	12	1	..	...	168
Newfoundland, 365—Morris Idylense Sanatorium	TB	Corp	50	19	..	...	22
New Lisbon, 213—Burlington Burlington County Hospital for the Insane	Ment	County	300	235	..	...	34
New Jersey State Colony	MeDe	State	800	769	..	...	98
Paterson, 129,656—Passaic Paterson City Hospital	Chrls	City	110	55	..	...	212
Roseland, 1,550—Essex Mountain View Rest	N&M	Corp	22	16	..	...	27
Sea Isle City, 773—Cape May Sea Isle Hospital and Train- ing School	N&M	Corp	118	118	..	...	38
Totowa (Little Falls P. O.), 5,130—Passaic North Jersey Training School	MeDe	State	625	618	..	...	49
Union, 124,697—Mercer State Home for Girls	Inst	State	70	50	3	33	327
Upper Montclair, Essex Montclair Sanatorium	Conv	Part	10	8	..	...	23
Vineland, 7,914—Cumberland Maphurst School	MeDe	Indlv	20	18	..	...	None
New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives and Widows	Inst	State	62	20	..	...	14
Training School at Vineland	MeDe	NPAasn	568	545	..	...	51
Vineland State School	MeDe	State	1,527	1,550	..	...	74
Westfield, 18,458—Union Brookside Nursing Home	Conv	Indlv	29	29	..	...	24
Woodbine, 2,111—Cape May State Colony for Feeble- minded Males	MeDe	State	730	687	..	...	31

NEW MEXICO

Hospitals and Sanatoriums

Albuquerque, 35,449—Bernalillo Albuquerque Indian Sanat.▲	TB	IA	100	74	..	...	147
Atchison, Topeka and Santa Fe Hospital	Indus	NPAasn	67	29	..	...	374
Children's Home and Hosp.▲	Chil	NPAasn	40	8	..	...	135
Methodist Sanatorium	TB	Church	65	58	..	...	71
Nazareth Sanatorium	Conv	Church	25	12	..	...	131
St. Joseph Sanatorium and Hospital▲	GenTb	Church	170	106	30	873	3,847
Southwestern Presbyterian San- atorium▲	GenTb	Church	147	111	12	583	2,794
U. S. Indian School Hosp.▲	Gen	IA	60	30	8	113	1,004
Veterans Admin. Facility▲	GenTb	Vet	250	208	..	...	1,189
Artesia, 4,071—Eddy Artesia Municipal Hospital...	Gen	Church	25	10	7	130	498
Black Rock (Zuni P.O.),—McKinley Zuni Indian Hospital	IA	IA	43	18	8	12	534
Carlsbad, 7,116—Eddy Carlsbad Memorial Hosp.▲	Gen	NPAasn	25	13	9	201	1,115
St. Francis Xavier Hospital...	Gen	Church	45	24	12	400	1,592
Clayton, 3,188—Union St. Joseph Hospital	Gen	Church	25	11	5	104	349
Clovis, 10,065—Curry Atchison, Topeka and Santa Fe Hospital	Indus	NPAasn	34	17	..	...	477
Clovis Memorial Hospital...	Gen	City	46	40	12	640	1,811
Crownpoint, 90—McKinley Eastern Navajo Hospital...	Gen	IA	65	34	10	80	1,223
Dawson, 2,000—Colfax Phelps Dodge Corp. Hosp.▲	Gen	NPAasn	25	4	4	50	90
Deming, 3,408—Luna Deming Ladies Hospital	Gen	NPAasn	25	9	5	129	610

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Dulce, 150—Rio Arriba Jicarilla Hosp. and Sanat.▲	GenTb	IA	74	35	4	30	308
Jicarilla Indian Sanatorium...	Unit of	Jicarilla Hospital and Sanatorium					
Embudo, Rio Arriba Embudo Presbyterian Hosp.▲	Gen	Church	25	16	13	291	514
Farmington, 2,161—San Juan San Juan Episcopal Indian Mission Hospital	Gen	Church	16	9	2	48	371
San Juan Hospital	Gen	NPAasn	22	7	7	55	315
Fort Bayard, 750—Grant Veterans Admin. Facility▲	GenTb	Vet	305	180	..	...	658
Fort Stanton, 490—Lincoln U. S. Marine Hospital▲	TB	USPHS	237	177	..	11	253
Fort Wingate, 100—McKinley Charles H. Burke Hospital...	Gen	IA	35	19	4	31	679
Gallup, 7,041—McKinley St. Mary's Hospital▲	Gen	Church	90	33	12	200	1,585
Hobbs, 10,610—Lea Hobbs General Hospital	Gen	Indlv	25	14	10	227	991
Hot Springs, 2,940—Sierra Carrie Tingley Hospital for Crippled Children▲	Orth	State	100	63	..	...	171
Las Vegas, 5,911—San Miguel Las Vegas Hospital (Carpen- ter Memorial)	Gen	NPAasn	25	16	5	72	666
New Mexico State Hospital, Ment	State	State	1,000	870	..	...	300
St. Anthony's Hospital	Gen	Church	60	42	13	251	1,498
Mescalero, 200—Otero Mescalero Apache Indian Hosp. Gen	IA	IA	32	14	4	29	449
Raton, 7,607—Colfax New Mexico Miners' Hosp.▲	Gen	State	83	17	10	117	685
Rehoboth, 150—McKinley Rehoboth Mission Hospital...	Gen	Church	30	22	10	122	677
Roswell, 13,482—Chaves St. Mary's Hospital	Gen	Church	70	32	18	510	1,907
Santa Fe, 20,325—Santa Fe St. Vincent Sanatorium and Hospital▲	GenTb	Church	89	54	12	217	1,556
Santa Fe Indian Hospital...	Gen	IA	76	20	6	31	546
Santa Rita, 2,000—Grant Santa Rita Hospital	Gen	NPAasn	47	21	10	216	979
Shiprock, 125—San Juan Northern Navajo Hospital...	Gen	IA	50	39	4	142	1,116
Silver City, 5,044—Grant Silver City General Hospital...	Gen	NPAasn	30	22	10	238	1,222
Socorro, 3,712—Socorro State Tuberculosis Sanat.▲	TB	State	92	74	..	...	184
Taos, 965—Taos Holy Cross Hospital	Gen	Church	30	9	6	109	691
Valmora, 125—Mora Valmora Sanatorium	TB	NPAasn	75	39	..	...	131

Related Institutions

Lordsburg, 3,101—Hidalgo Lordsburg Hospital	Gen	Corp	20	6	3	55	281
Los Lunas, 686—Valencia New Mexico Home and Train- ing School for Mental De- fectives	MeDe	State	80	71	..	...	3
Springer, 1,314—Colfax Springer Hospital	Gen	Indlv	10	2	3	6	30
Taos, 965—Taos Thomas P. Martin Hospital	Gen	IA	17	7	3	5	268
Tohatchi, 100—McKinley Tohatchi General Hospital...	Gen	IA	14	11	4	45	577

NEW YORK

Hospitals and Sanatoriums

Albany, 130,577—Albany Albany Hospital▲	GenTb	NPAasn	581	511	56	1,317	12,196
Anthony N. Biady Maternity Home▲	Mat	Church	65	58	75	1,669	1,807
Child's Hospital	Chil	Church	65	35	..	...	661
Memorial Hospital▲	Gen	NPAasn	130	119	16	498	3,351
St. Peter's Hospital▲	Gen	Church	159	128	..	...	4,382
Albion, 4,660—Orleans Arnold Gregory Memorial Hospital	Gen	NPAasn	24	20	11	102	733
Amityville, 5,038—Suffolk Long Island Home	N&M	Corp	207	171	..	...	301
Louden-Kneckerbocker Hall...	N&M	Corp	175	137	..	...	239
Amsterdam, 33,329—Montgomery Amsterdam City Hospital...	Gen	NPAasn	117	82	16	377	2,623
Montgomery Sanatorium	TB	County	60	46	..	...	65
St. Mary's Hospital...	Gen	Church	108	96	22	552	2,674
Auburn, 35,753—Cayuga Auburn City Hospital▲	Gen	NPAasn	200	176	40	892	6,844
Home for Convalescent and Crippled Children	Unit of	Auburn City Hospital					
Mercy Hospital▲	Gen	Church	84	67	14	336	1,879
Ballston Spa, 4,443—Saratoga Benedict Memorial Hospital...	Gen	NPAasn	25	11	9	198	463
Batavia, 17,267—Genesee Batavia Hospital	Gen	NPAasn	65	53	17	446	1,960
St. Jerome Hospital	Gen	Church	73	70	18	520	2,512
Veterans Admin. Facility▲	Gen	Vet	307	210	..	...	1,565
Bath, 4,696—Steuben Bath Memorial Hospital...	Gen	NPAasn	60	48	10	323	1,804
Veterans Admin. Facility▲	Gen	Vet	428	320	..	...	2,719

Key to symbols and abbreviations is on page 855

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins†	Number of Births	Admissions †
Bay Shore, 10,000—Suffolk							
Dr. King's Hospital.....	Gen	Indiv	30	12	6	117	511
Southside Hospital.....	Gen	NPAssn	96	77	24	922	3,301
Beacon, 12,572—Dutchess							
Craig House.....	N&M	Corp	77	35	..	..	44
Highland Hospital.....	Gen	NPAssn	46	29	12	233	841
Matteawan State Hospital..	Ment	State	1,557	1,557	..	..	112
Bedford Hills, 2,000—Westchester							
Montefiore Hospital Country Sanatorium*.....	TB	NPAssn	230	225	..	..	219
Bellerose, 1,317—Queens							
Hillside Hospital*.....	N&M	NPAssn	83	81	..	..	206
Binghamton, 78,300—Broome							
Binghamton City Hosp.*.....	Gen	City	519	313	40	1,199	10,475
Binghamton State Hosp.*.....	Ment	State	2,974	2,634	..	..	636
Our Lady of Lourdes Memorial Hospital.....	Gen	Church	88	56	22	821	2,060
Brentwood, 495—Suffolk							
Pilgrim State Hospital*.....	Ment	State	9,529	9,693	..	..	1,352
Ross Sanitarium.....	Gen	Indiv	35	20	..	..	95
Brewster, 1,803—Putnam							
Mountainbrook Farm Sanit..	N&M	Indiv	20	16	..	..	30
Brookport, 3,590—Monroe							
Brookport Central Hospital..	Gen	NPAssn	18	14	6	116	552
Bronxville, 6,888—Westchester							
Lawrence Hospital.....	Gen	NPAssn	104	73	20	449	2,474
Brooklyn, 2,608,285—Kings							
Adelphi Hospital.....	Gen	NPAssn	160	123	50	1,212	4,620
Bay Ridge Hospital.....	Corp	Corp	84	78	30	1,299	3,268
Bensonhurst Maternity Hosp.	Mat	Corp	24	22	24	801	835
Bethany Deaconess Hospital..	Gen	Church	83	65	25	519	2,033
Beth-El Hospital*.....	Gen	NPAssn	242	184	100	2,511	6,947
Beth Moses Hospital*.....	Gen	NPAssn	185	134	30	988	4,304
Brooklyn Cancer Institute*.....	Cancer	City	87	73	..	..	748
Brooklyn Doctors Hospital..	Gen	Corp	120	76	55	1,501	2,770
Brooklyn Eye and Ear Hospital*.....	ENT	NPAssn	143	72	..	..	6,893
Brooklyn Hospital*.....	Gen	NPAssn	366	237	44	1,286	7,614
Brooklyn State Hospital*.....	Ment	State	3,450	3,410	..	..	2,505
Brooklyn Thoracic Hospital*.....	TB	NPAssn	125	96	..	..	108
Brooklyn Womens Hospital..	Mat	NPAssn	43	43	50	1,607	1,856
Bushwick Hospital*.....	Gen	NPAssn	105	76	25	639	2,617
Caledonian Hospital*.....	Gen	NPAssn	100	69	30	725	2,666
Carson C. Peck Memorial Hospital*.....	Gen	NPAssn	103	84	38	1,340	5,443
Coney Island Hospital*.....	Gen	City	270	192	30	589	5,611
Crown Heights Hospital.....	Gen	Corp	144	118	28	909	3,454
Cumberland Hospital*.....	Gen	City	261	211	39	793	6,205
Evangelical Deaconess Hosp..	Gen	Church	105	58	20	876	2,044
Fort Hamilton Station Hosp.	Gen	Army	60	26	..	..	878
Greenpoint Hospital*.....	Gen	City	265	196	35	853	5,114
Hospital of the Holy Family.....	Gen	Church	116	105	..	..	2,446
House of St. Giles the Cripple.....	Orth	Church	44	37	..	..	230
Israel Zion Hospital*.....	Gen	NPAssn	380	305	142	4,721	10,532
Jewish Hospital*.....	Gen	NPAssn	547	425	114	4,134	13,446
Jewish Sanitarium and Hospital for Chronic Diseases*.....	Chr	NPAssn	542	522	..	..	273
Kings County Hospital*.....	Gen	City	2,400	1,922	130	2,804	46,470
Kingsway Avenue Hospital*.....	Iso	City	510	386	..	..	5,377
Kingsway Hospital.....	Gen	Indiv	22	9	8	205	329
Long Island College Hospital*.....	Gen	NPAssn	406	304	47	1,559	8,019
Lutheran Hospital.....	Gen	Church	98	58	20	645	2,447
Madison Park Hospital.....	Gen	Corp	163	92	37	1,212	3,332
Methodist Hospital*.....	Gen	Church	435	234	80	2,099	8,552
Midwood Hospital.....	Gen	Corp	55	42	21	651	1,814
Norwegian Lutheran Deaconesses' Home and Hosp.*.....	Gen	Church	162	143	38	819	4,106
Prospect Heights Hospital*.....	Gen	NPAssn	146	105	39	980	3,982
Riverdale Hospital.....	Gen	Corp	40	15	18	567	774
St. Catherine's Hospital*.....	Gen	Church	285	182	68	1,633	5,930
St. Charles Hospital Orthopedic Clinic.....	Orth	Church	55	50	..	..	220
St. John's Hospital*.....	Gen	Church	218	135	30	827	4,296
St. Mary's Hospital*.....	Gen	Church	260	181	68	1,273	5,004
St. Peter's Hospital*.....	Gen	Church	193	130	27	679	3,033
Samaritan Hospital.....	Gen	Church	80	58	35	919	2,158
Shore Road Hospital.....	Gen	Corp	100	62	40	916	2,403
Swedish Hospital.....	Gen	NPAssn	99	68	18	452	2,122
U. S. Naval Air Station Dispensary.....	Gen	Navy	118	32	..	..	1,991
U. S. Naval Hospital*.....	Gen	Navy	1,142	1,087	26	607	12,544
U. S. Public Health Service Hospital.....	Gen	USPHS	485	347	..	..	8,264
Unity Hospital.....	Gen	NPAssn	226	139	57	1,244	5,022
Victory Memorial Hospital..	Gen	NPAssn	55	35	23	745	2,026
Wade Hospital.....	Gen	Indiv	20	7	6	36	259
Williamsburgh Maternity Hospital*.....	Mat	Indiv	69	52	52	1,761	1,951
Y.....	Gen	NPAssn	167	129	30	1,010	4,642
Buffalo Eye and Ear Infirmary and Wettlaufer Clinic..	ENT	NPAssn	14	6	..	..	559
Buffalo General Hospital*.....	Gen	NPAssn	450	406	50	736	10,959
Buffalo Hospital of the Sisters of Charity*.....	Gen	Church	215	168	26	481	6,352
Buffalo State Hospital*.....	Ment	State	2,589	2,459	..	..	472
Children's Hospital*.....	MatCh	NPAssn	242	183	60	1,791	6,440
Deaconess Hospital*.....	Gen	NPAssn	190	167	49	1,214	6,635
Edward J. Meyer Memorial Hospital (Buffalo City Hospital)*.....	GenTh	City	1,131	791	38	669	9,343

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins†	Number of Births	Admissions †
Emergency Hospital of the Sisters of Charity.....	Gen	Church	173	143	..	..	4,986
Lafayette General Hospital..	Gen	NPAssn	64	45	17	388	2,175
Louise de Marillac Hospital..	Mat	Church	100	..	82	Estab.	1943
Mercy Hospital*.....	Gen	Church	198	174	60	1,808	6,166
Millard Fillmore Hosp.*.....	Gen	NPAssn	337	311	107	3,706	11,897
St. Francis Hospital.....	Gen	Church	60	49	34	902	2,277
State Institute for the Study of Malignant Diseases*.....	SkCa	State	107	95	..	..	1,840
U. S. Marine Hospital*.....	Gen	USPHS	75	69	..	..	819
Callicoon, 850—Sullivan							
Callicoon Hospital.....	Gen	Indiv	14	8	3	101	296
Cambridge, 1,572—Washington							
Mary McClellan Hospital*.....	Gen	NPAssn	100	72	15	152	1,045
Canandaigua, 8,321—Ontario							
Brigham Hall Hospital.....	N&M	Corp	80	59	..	..	131
Frederick Ferris Thompson Hospital*.....	Gen	Corp	125	69	19	463	2,805
Veterans Admin. Facility*.....	Ment	Vet	1,125	1,170	..	..	249
Canastota, 4,150—Madison							
Canastota Memorial Hospital	Gen	City	21	12	6	157	672
Cassadaga, 514—Chautauqua							
Newton Memorial Hospital..	TB	County	180	146	..	..	110
Castle Point, 23—Dutchess							
Veterans Admin. Facility*.....	TB	Vet	479	455	..	..	606
Catskill, 5,429—Greene							
Memorial Hospital of Greene County*.....	Gen	StateCo	60	52	15	358	1,767
Central Islip, 2,000—Suffolk							
Central Islip State Hosp.*.....	Ment	State	8,063	7,269	..	..	1,163
Central Valley, 1,049—Orange							
Falkirk in the Ramapo.....	N&M	Corp	40	27	..	..	8
Chatham, 2,254—Columbia							
Community Hospital.....	Gen	Indiv	35	8	5	35	167
Chenango Bridge, 400—Broome							
Broome County Tuberculosis Hospital.....	TB	County	81	68	..	..	70
Clifton Springs, 1,413—Ontario							
Clifton Springs Sanitarium and Clinic*.....	Gen	NPAssn	275	131	10	197	3,311
Cohoes, 21,955—Albany							
Cohoes Hospital.....	Gen	NPAssn	69	56	12	354	1,296
Cold Spring, 1,897—Putnam							
Julia L. Butterfield Memorial Hospital.....	Gen	NPAssn	45	18	5	69	488
Cooperstown, 2,599—Otsego							
Mary Imogene Bassett Hospital*.....	Gen	NPAssn	96	61	10	274	2,018
.....	Gen	Part	40	..	No data supplied	..	..
.....	Gen	NPAssn	16	11	6	108	400
Corning, 16,212—Steuben							
Corning Hospital*.....	Gen	NPAssn	104	81	31	811	4,774
Cornwall, 1,978—Orange							
Cornwall Hospital.....	Gen	NPAssn	66	45	15	273	1,343
Cortland, 15,881—Cortland							
Cortland County Hospital*.....	Gen	NPAssn	128	80	22	505	2,875
VerNooy Sanitarium.....	Gen	Indiv	18	14	8	193	525
Cuba, 1,699—Allegany							
Cuba Memorial Hospital.....	Gen	NPAssn	23	13	10	130	582
Dannemora, 4,830—Clinton							
Clinton Prison, General and Tuberculosis Hospital.....	Inst	State	173	121	..	..	1,210
Dannemora State Hospital..	Ment	State	1,299	1,224	..	..	110
Dansville, 4,967—Livingston							
Dansville General Hospital....	Gen	NPAssn	40	26	8	208	1,048
Delhi, 1,841—Delaware							
Delaware County Sanat.....	ChrConv	County	32	25	..	..	74
Delhi Hospital.....	Gen	NPAssn	13	8	6	61	285
Dobbs Ferry, 5,883—Westchester							
Dobbs Ferry Hospital*.....	Gen	NPAssn	46	26	10	165	937
Dunkirk, 17,713—Chautauqua							
Brooks Memorial Hospital....	Gen	NPAssn	70	50	22	537	2,661
Elizabethtown, 640—Essex							
Community Hospital.....	Gen	NPAssn	15	5	5	45	146
Ellenville, 4,000—Ulster							
Veterans Memorial Hospital..	Gen	NPAssn	18	14	9	138	563
Elmira, 45,106—Chemung							
Arnot-Ogden Memorial Hospital*.....	Gen	NPAssn	194	154	32	1,033	5,708
Chemung County Sanatorium	TB	County	42	39	..	..	53
St. Joseph's Hospital*.....	Gen	Church	242	195	37	716	5,889
Endicott, 17,702—Broome							
Bradford Lord Memorial Hospital.....	Unit of Binghamton City Hospital	City	116	68	30	447	2,417
Ideal Hospital*.....	Gen	City	116	68	30	447	2,417
Farmingdale, 3,524—Nassau							
Nassau County Sanat*.....	TB	County	412	223	..	..	271
Far Rockaway, —Queens							
Hospital for Joint Diseases, Country Branch.....	Unit of Hosp. for Joint Diseases, N. Y. C.	Church	127	74	36	692	2,818
St. Joseph Hospital*.....	Gen	Church	127	74	36	692	2,818
Fillmore, 518—Allegany							
Genesee County Memorial Hospital.....	Gen	NPAssn	16	6	4	50	144
Fishers Island, 750—Suffolk							
Station Hospital.....	Gen	Army	62	41	..	..	746
Flushing, —Queens							
Flushing Hospital and Dispensary*.....	Gen	NPAssn	227	179	94	2,146	6,638
Parsons Hospital.....	Gen	Corp	63	57	22	629	2,891

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Fort Niagara (Youngstown P.O.), —Niagara Station Hospital	Gen	Army	57	12	..	...	457
Fort Slocum, —Westchester Station Hospital	Gen	Army	138	61	..	...	2,001
Fort Totten, —Queens Station Hospital	Gen	Army	76	31	..	...	842
Fort Wadsworth (Staten Island P.O.), —Richmond Station Hospital	Gen	Army	35	17	..	...	560
Fulton, 13,362—Oswego Albert Lindley Lee Memorial Hospital	Gen	City	61	26	16	458	1,074
Gabriels, 300—Franklin Sanatorium Gabriel	TB	Church	112	82	..	...	95
Geneva, 15,555—Ontario Geneva General Hospital	Gen	NPAasn	98	65	22	480	2,250
Glen Cove, 12,415—Nassau North Country Community Hospital	Gen	NPAasn	100	102	20	741	3,047
Glens Falls, 18,816—Warren Glens Falls Hospital	Gen	NPAasn	120	117	30	913	3,986
Westmount Sanatorium	TB	County	52	43	..	...	22
Gloversville, 23,329—Fulton Nathan Littauer Hospital	Gen	NPAasn	120	111	30	722	3,806
Goshen, 3,073—Orange Goshen Hospital	Gen	NPAasn	40	21	12	108	1,027
Interpines	N&M	Indiv	60	35	..	...	39
Gouverneur, 4,478—St. Lawrence Stephen B. Van Duzee Hosp.	Gen	NPAasn	19	15	10	242	615
Governors Island, —New York Station Hospital	Gen	Army	212	158	9	94	2,805
Gowanda, 3,156—Cattaraugus Townsend Hospital	Gen	NPAasn	23	16	10	248	902
Granville, 3,173—Washington Emma Loring Stevens Hosp.	Gen	Corp	16	7	8	85	211
Greenport, 3,233—Suffolk Eastern Long Island Hosp.	Gen	NPAasn	47	28	13	276	1,167
Hartman, 762—Orange U. S. Naval Convalescent Hospital	Conv	Navy	80	50	..	...	250
Harrison, 8,590—Westchester St. Vincent's Retreat	N&M	Church	200	178	..	...	92
Helmuth, 100—Erie Gowanda State Homeopathic Hospital	Gen	State	2,538	2,711	..	...	485
Hempstead, 20,456—Nassau Meadowbrook Hospital	Gen	County	250	211	25	433	5,085
Ierkimer, 9,617—Herkimer Herkimer Memorial Hospital	Gen	NPAasn	53	55	18	384	2,018
Holtsville, 260—Suffolk Suffolk Sanatorium	TB	County	160	155	..	...	117
Hornell, 15,649—Steuben Bethesda Hospital	Gen	NPAasn	44	23	10	186	1,153
St. James Mercy Hospital	Gen	Church	96	61	16	379	3,529
Hudson, 11,517—Columbia Hudson City Hospital	Gen	NPAasn	101	75	17	384	4,038
Huntington, 11,250—Suffolk Huntington Hospital	Gen	NPAasn	75	64	12	690	2,581
Ilion, 8,927—Herkimer Ilion Hospital	Gen	NPAasn	20	25	7	257	980
Irrington, 3,272—Westchester Irrington House	ChilCard	NPAasn	108	108	..	...	108
Ithaca, 19,720—Tompkins Cornell University Infirmary and Clinic	Inst	NPAasn	154	36	..	...	3,306
Hermann M. Biggs Memorial Hospital	TB	State	250	212	..	...	201
Tompkins County Memorial Hospital	Gen	NPAasn	117	90	26	769	3,723
Jackson Heights, —Queens Physicians Hospital	Gen	Corp	127	120	8	2,109	5,311
Jamulien, —Queens Jamulien Hospital	Gen	NPAasn	185	132	42	1,271	5,304
Mary Immaculate Hosp.	Gen	Church	256	221	60	1,924	9,452
Memorial Hospital	Gen	Indiv	58	50	16	827	2,500
Queens General Hospital	Gen	City	641	485	52	1,397	9,025
Trilboro Hospital	TB	City	557	565	..	...	623
Van Wyck Hospital	Gen	Indiv	35	14	12	135	371
Jamestown, 42,638—Chautauqua Jamestown General Hospital	Gen	City	110	85	22	520	3,170
Woman's Christian Association Hospital	Gen	NPAasn	110	101	29	806	4,032
Johnson City, 18,000—Boone Charles S. Wilson Memorial Hospital	Gen	NPAasn	318	207	47	1,052	6,351
Katonah, 1,800—Westchester "Four Winds"	N&M	Corp	37	25	..	...	34
Hillbourne Farms	Nerv	NPAasn	15	3	..	...	3
Pinewood Sanitarium	N&M	Indiv	72	51	..	...	202
Kings Park, 2,500—Suffolk Kings Park State Hosp.	Ment	State	6,074	6,383	..	...	1,430
Kingston, 28,589—Ulster Benedictine Hospital (Our Lady of Victory Sanitarium)	Gen	Church	90	82	20	391	3,425
Kingston Hospital	Gen	NPAasn	118	66	15	365	2,484
Ulster County Tuberculosis Hospital	TB	County	50	54	..	...	75
Lackawanna, 24,058—Erie Moses Taylor Hospital	Indus	NPAasn	28	14	..	...	240
Our Lady of Victory Hosp.	Gen	Church	153	108	32	1,051	4,143

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Lake Kushnag, 200—Franklin Stony Wold Sanatorium	TB	NPAasn	145	138	..	...	109
Lake Placid, 3,136—Essex Lake Placid General Hospital	Gen	City	21	11	5	41	303
Liberty, 3,788—Sullivan Matmonides Hospital	Gen	NPAasn	35	23	6	150	795
Workmen's Circle Sanatorium	TB	NPAasn	75	50	..	...	98
Little Falls, 10,163—Herkimer Little Falls Hospital	Gen	NPAasn	76	61	13	406	2,232
Livingston, 406—Columbia Potts Memorial Institute	TB	NPAasn	52	33	..	...	42
Lockport, 24,370—Niagara Lockport City Hospital	Gen	City	142	128	30	771	4,171
Niagara Sanatorium	TB	County	225	139	..	...	132
Long Beach, 9,036—Nassau Long Beach Hospital	Gen	NPAasn	57	34	7	100	1,203
Long Island City, —Queens Astoria Sanatorium	Gen	Indiv	33	28	25	701	1,258
Boulevard Hospital	Gen	Corp	87	72	32	1,207	3,412
River Crest Sanitarium	N&M	Corp	132	97	..	...	243
St. John's Long Island City Hospital	Gen	Church	243	176	41	998	5,418
Lowville, 3,578—Lewis Lewis County General Hosp.	Gen	StateCo	44	32	18	288	1,040
Lyons, 3,863—Wayne Edward J. Barber Hospital	Gen	Indiv	22	19	4	122	516
Lyons Hospital	Gen	Corp	26	12	6	109	420
Malone, 8,713—Franklin Alce Hyde Memorial Hospital	Gen	NPAasn	82	70	15	379	2,415
Marcy, 800—Oneida Marcy State Hospital	Ment	State	2,776	2,493	..	...	594
Medina Memorial Hospital	Gen	NPAasn	18	12	5	51	568
Middle Grove, 100—Saratoga Saratoga County Tuberculosis Hospital	TB	County	100	54	..	...	57
Middletown, 21,908—Orange Elizabeth A. Horton Memorial Hospital	Gen	NPAasn	90	72	18	330	2,325
Middletown Sanitarium and Hospital	Gen	Indiv	50	30	8	212	935
Middletown State Homeopathic Hospital	Ment	State	3,546	3,422	..	...	500
Mincola, 10,661—Nassau Nassau Hospital	Gen	NPAasn	227	165	30	1,305	6,001
Minerville, 600—Essex Minerville Hospital	Gen	NPAasn	14	11	1	3	323
Mitchell Field, —Nassau Station Hospital	Gen	Army	50	30	6	22	1,330
Monticello, 3,737—Sullivan Hamilton Avenue Hospital	Gen	Indiv	25	13	6	84	456
Monticello Hospital	Gen	NPAasn	30	15	5	78	673
Northern Westchester Hosp.	Gen	NPAasn	108	72	18	442	2,940
Mount McGregor, 300—Saratoga Metropolitan Life Insurance Company Sanatorium	TB	NPAasn	350	64	..	...	27
Mount Morris, 3,530—Livingston Mount Morris Tuberculosis Hospital	TB	State	250	181	..	...	162
Mount Vernon, 67,362—Westchester Mount Vernon Hospital	Gen	NPAasn	210	122	41	1,025	4,706
Newark, 9,646—Wayne Newark Hospital	Gen	Indiv	26	22	6	201	880
Newburgh, 31,883—Orange Estelle and Walter C. Odell Memorial Sanatorium for Tuberculosis	TB	County	50	43	..	...	45
St. Luke's Hospital	Gen	NPAasn	188	130	40	699	4,110
New Rochelle, 58,408—Westchester New Rochelle Hospital	Gen	NPAasn	264	211	45	1,038	6,092
New York City, 4,582,260—New York Babies Hospital	Chil	NPAasn	162	117	..	...	3,446
Beekman Hospital	Gen	NPAasn	96	66	..	...	1,946
Bellevue Hospital	Gen	City	2,937	2,177	102	1,328	60,197
Beth David Hospital	Gen	NPAasn	160	117	27	679	3,955
Beth Israel Hospital	Gen	NPAasn	315	257	74	2,373	7,516
Bronx Eye and Ear Infirmary	ENT	NPAasn	54	18	..	...	3,514
Bronx Hospital	Gen	NPAasn	305	221	84	2,789	8,075
Bronx Maternity and Woman's Hospital	GynOb	NPAasn	34	15	34	639	720
Charles B. Towns Hospital	Drug	Corp	50	20	..	...	762
Columbus Hospital	Gen	Church	260	193	40	695	5,231
Columbus Hospital Extension See Mother Cabrini Memorial Hospital	Gen	NPAasn	89	24	12	135	846
Community Hospital	Gen	Corp	27	21	15	588	956
Crotona Park Sanitarium	Gen	NPAasn	275	151	50	798	5,018
Doctors Hospital	Gen	NPAasn	117	42	..	...	1,537
Downtown Hospital	Gen	NPAasn	340	293	71	1,430	7,993
Flower and Fifth Avenue Hospitals	Gen	City	505	408	84	893	10,454
Fordham Hospital	Gen	Indiv	10	5	20	160	172
Franklin Maternity Sanit.	Mat	NPAasn	253	201	62	1,439	5,993
French Hospital	Gen	City	1,889	1,730	..	...	1,975
Goldwater Memorial Hosp.	Gen	City	200	169	20	246	3,751
Gouverneur Hospital	Gen	NPAasn	50	8	..	...	1,719
Harlem Eye and Ear Hosp.	ENT	NPAasn	654	583	109	2,464	15,286
Harlem Hospital	Gen	City	255	245	..	...	384
Home and Hospital of the Daughters of Jacob	Gen	NPAasn	255	245	..	...	384

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Adm. - sions †
Hospital for Joint Dis- cases**	GenOrth	NPAasn	362	303	..	..	5,531
Hosp. for Special Surgery**	Orth	NPAasn	245	174	..	..	3,112
Hospital of the Rockefeller Institute for Medical Re- search	Gen	NPAasn	60	38	..	..	314
International Medical Center	Gen	NPAasn	54	12	17	14	216
Jewish Maternity Hospital**	Unit of Beth Israel Hospital						
Jewish Memorial Hospital**	Gen	NPAasn	177	151	40	1,638	5,103
Kleckerbocker Hospital**	Gen	NPAasn	178	116	22	309	3,634
Left-Central Maternity Hosp. Mat	Indiv		30	30	30	1,318	1,391
Lenox Hill Hospital**	Gen	NPAasn	532	393	68	1,698	10,555
Le Roy Sanitarium**	Gen	Corp	54	31	14	225	1,519
Lincoln Hospital**	Gen	City	399	321	70	1,608	9,521
Lutheran Hospital	Gen	NPAasn	110	70	30	650	2,533
Lying-in Hospital**	Unit of New York Hospital						
Manhattan Eye, Ear and Throat Hospital**	ENT	NPAasn	210	126	..	..	11,786
Manhattan General Hospital	Gen	Corp	315	121	60	1,222	6,242
Manhattan Maternity and Dis- pensary	Unit of New York Hospital						
Manhattan State Hospital**	Ment	State	3,799	3,307	..	..	2,263
Memorial Hospital**	Cancer	NPAasn	213	193	..	..	5,166
Metropolitan Hospital**	Gen	City	1,143	991	40	903	9,582
Midtown Hospital	Gen	NPAasn	61	41	..	..	2,393
Misericordia Hospital**	Gen	Church	201	146	62	1,164	4,227
Montefiore Hospital for Chronic Diseases**	GenTb	NPAasn	714	582	..	..	1,773
Morrisania City Hosp.**	Gen	City	466	440	45	962	11,093
Mother Cabrini Memorial Hos- pital**	Gen	Church	175	91	30	578	2,976
Mount Eden Hospital	Indiv		40	30	30	429	1,707
Mount Sinai Hospital**	Gen	NPAasn	856	619	..	..	15,030
Murray Hill Hospital	Gen	Corp	86	32	..	..	1,446
Neurological Institute of New York**	Neur	NPAasn	205	164	..	..	3,828
New York City Cancer Insti- tute Hospital**	Cancer	City	192	185	..	..	896
New York City Hospital**	Gen	City	850	563	30	538	7,534
New York Eye and Ear In- firmmary**	ENT	NPAasn	185	103	..	..	5,863
New York Foundling Hospi- tal**	MatChil	Church	125	67	56	971	1,402
New York Hospital**	Gen	NPAasn	972	773	121	3,252	17,608
New York Infirmary for Women and Children**	Gen	NPAasn	122	85	38	990	2,638
New York Nursery and Childs Hospital	Unit of New York Hospital						
New York Orthopaedic Dis- pensary and Hospital**	Orth	NPAasn	143	111	..	..	1,079
New York Polyclinic Medical School and Hospital**	Gen	NPAasn	374	273	37	1,032	8,496
New York Post-Graduate Medi- cal School and Hosp.**	Gen	NPAasn	400	302	..	..	8,622
New York Skin and Cancer Hospital	Unit of New York Post-Graduate Medical School and Hospital						
New York State Psychiatric Institute and Hospital**	Ment	State	150	136	..	..	335
Park East Hospital	Gen	Corp	124	92	24	525	3,787
Parkway Hospital	Gen	NPAasn	75	30	15	374	2,648
Park West Hospital	Gen	Corp	84	66	13	374	2,492
Payne Whitney Psychiatric Clinic**	Unit of New York Hospital						
Presby Hosp	**	NPAasn	693	694	144	2,845	18,316
Psychiatric Pavilion	Unit of Bellevue Hospital						
Reconstruction Hospital	Unit of New York Post-Graduate Medical School and Hospital						
Riker's Island Hospital**	GenInst	City	258	105	..	..	1,466
Riverside Hospital**	TbIso	City	360	275	..	..	358
Roosevelt Hospital**	Gen	NPAasn	367	281	..	..	7,092
St. Ann's Maternity Hospital	Unit of New York Foundling Hospital						
St. Clare's Hospital**	Gen	Church	331	260	70	1,635	7,978
St. J	Gen	Church	155	95	27	673	3,027
St. John's Hospital	Unit of New York Foundling Hospital						
St. Joseph's Hospital for Chest Diseases	Tb	Church	300	285	..	..	635
St. Luke's Hospital**	Gen	NPAasn	502	358	..	..	8,121
St. Vincent's Hospital**	Gen	Church	547	458	100	1,784	11,393
Seton Hospital (Male Div.)	Tb	Church	265	258	..	..	433
Seton Hospital (Nazareth Hos- pital for Women and Chil- dren)	Tb	Church	305	240	..	..	204
Sloane Hosp. for Women**	Gen	NPAasn	214	143	33	998	4,619
Sydenham Hospital**	Gen	NPAasn	100	75	20	603	2,519
Union Hospital	Navy		367	173	..	..	2,737
U. S. Hos	USPHS		464	327	..	..	2,469
U. S. Mar	Corp		50	..	..	..	No data supplied
University Veterans	Vet		1,095	1,463	..	..	8,039
Westchester	Corp		165	108	60	2,064	4,963
	Indiv		82	67	..	..	460
	Gen	NPAasn	131	90	21	481	3,465
	Corp		76	..	..	..	No data supplied
	M&O, TbIso	City	433	220	..	..	5,469
Woman's Hospital**	Gen	Church	48	22	20	354	805
Niagara Falls, 78,029—Niagara	GynOb	NPAasn	221	151	100	2,211	4,371
Mount St. Mary's Hosp.**	Gen	Church	188	149	49	1,302	5,804
Niagara Falls Memorial Hos- pital	Gen	NPAasn	166	160	24	1,130	6,899

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Adm. - sions †
Northport, 3,093—Suffolk							
Veterans Admin. Facility**	Ment	Vet	2,200	2,255	..	..	705
North Tonawanda, 20,254—Niagara							
Do Graff Memorial Hospital	Gen	City	55	38	24	751	2,554
Norwich, 8,049—Chenango							
Chenango Memorial Hosp.**	Gen	NPAasn	77	49	15	299	1,748
Nyack, 5,806—Rockland							
Nyack Hospital**	Gen	Corp	91	79	18	515	2,882
Ogdensburg, 16,346—St. Lawrence							
A. Barton Hepburn Hosp.**	Gen	Church	160	141	25	501	4,630
St. Lawrence State Hosp.**	Ment	State	2,275	2,290	..	..	478
Olean, 21,506—Cattaraugus							
Mountain Clinic	Gen	Indiv	33	16	5	92	603
Olean General Hospital**	Gen	NPAasn	85	62	24	489	2,388
Rocky Crest Sanatorium	Tb	County	42	36	..	..	49
St. Francis Hospital**	Gen	Church	100	45	18	337	1,455
Oneida, 10,291—Madison							
Main Street Hospital	Gen	Indiv	16	10	4	80	448
Oneida City Hospital**	Gen	City	80	59	19	454	2,028
Oneonta, 11,731—Otsego							
Aurelia Osborn Fox Memorial Hospital**	Gen	NPAasn	77	68	12	414	2,305
Homer Folks Tuberculosis Hos- pital**	Tb	State	250	211	..	..	247
Parshall Private Hospital	Gen	Indiv	28	8	6	95	370
Orangeburg, 750—Rockland							
Rockland State Hospital**	Ment	State	6,508	5,877	..	..	1,304
Ossining, 15,996—Westchester							
Ossining Hospital**	Gen	NPAasn	65	55	12	283	1,648
Sing Sing Prison Hospital**	Inst	State	84	40	..	..	1,083
Stony Lodge	N&M	Indiv	44	12	..	..	49
Oswego, 22,062—Oswego							
Oswego Hospital	Gen	NPAasn	89	70	11	540	2,479
Station Hospital	Gen	Army	34	28	..	..	483
Otisville, 889—Orange							
Municipal Sanatorium**	Tb	City	420	394	..	..	661
Owego, 5,068—Tioga							
Glenmary Sanitarium	N&M	Corp	50	6	..	..	4
Peekskill, 17,311—Westchester							
Peekskill Hospital	Gen	NPAasn	77	36	17	355	1,923
Penn Yan, 5,308—Yates							
Soldiers and Sailors Memo- rial Hospital**	Gen	NPAasn	50	32	10	248	1,430
Perryburg, 375—Cattaraugus							
J. N. Adam Memorial Hosp.**	Tb	City	482	400	..	..	322
Philmont, 1,679—Columbia							
Columbia County Tuberculo- sis Sanatorium	Tb	County	72	41	..	..	36
Plattsburg, 16,351—Clinton							
Champlain Valley Hospital**	Gen	NPAasn	106	80	15	351	2,635
Physicians Hospital**	Gen	NPAasn	98	74	18	379	2,602
Station Hospital	Gen	Army	70	51	3	32	1,353
Pomona, 50—Rockland							
Summit Park Sanatorium**	Tb	County	91	86	..	..	75
Port Chester, 23,073—Westchester							
Brooklea Farm	N&M	Indiv	15	12	..	..	20
Mary Harkness Home for Convalescents	Conv	NPAasn	50	26	..	..	478
St. Luke's Convalescent Hosp.	See Greenwich, Conn.						
United Hospital**	Gen	NPAasn	178	137	36	982	4,909
Port Jefferson, 3,500—Suffolk							
John T. Mather Memorial Hospital**	Gen	NPAasn	70	35	24	454	2,511
St. Charles Hospital for Crip- pled Children	Orth	Church	210	173	..	..	84
Wharton Memorial Institute	Unit of St. Charles Hospital for Crippled Children						
Port Jervis, 9,749—Orange							
St. Francis Hospital**	Gen	Church	55	32	10	175	910
Potsdam, 4,821—St. Lawrence							
Potsdam Hospital**	Gen	NPAasn	63	53	22	558	2,497
Poughkeepsie, 40,478—Dutchess							
Hudson River State Hospi- tal**	Ment	State	4,020	4,834	..	..	859
St. Francis Hospital**	Gen	Church	104	85	25	391	2,387
Samuel and Nettie Bowne Hos- pital	Tb	NPAasn	50	37	..	..	106
Samuel W. Bowne Memorial Hospital	Tb	CyCo	131	121	..	..	91
Vassar Brothers Hospital**	Gen	NPAasn	207	173	43	936	5,427
Queens Village, —Queens							
Creedmoor State Hospital**	Ment	State	4,862	4,612	..	..	710
Ray Brook, 550—Essex							
New York State Hospital**	Tb	State	385	337	..	..	420
Rhinebeck, 1,697—Dutchess							
Northern Dutchess Health Ser- vice Center	Gen	NPAasn	35	34	8	179	833
Richland, 300—Oswego							
Oswego County Sanatorium	Tb	County	105	65	..	..	62
Rochester, 324,975—Monroe							
Genesee Hospital**	Gen	NPAasn	224	205	32	936	5,931
Highland Hospital**	Gen	NPAasn	206	153	60	1,408	5,249
Iola-Monroe County Tubercu- losis Sanatorium**	Tb	County	370	339	..	..	354
Monroe County Hospital**	Gen	County	500	442	20	47	2,065
Park Avenue Hospital**	Gen	NPAasn	85	73	20	663	2,939
Rochester General Hosp.**	Gen	NPAasn	324	242	63	1,920	8,976
Rochester Municipal Hosp.**	See Strong Memorial Hospital						
Rochester State Hospital**	Ment	State	3,336	3,057	..	..	617
St. Mary's Hospital**	Gen	Church	330	270	60	1,734	8,136
Strong Memorial Hospital	Gen	NPAasn	649	462	72	1,576	14,431

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Rockaway Beach, —Queens							
Rockaway Beach Hospital and Dispensary*†	Gen	NPAasn	110	76	15	401	2,767
Rockville Centre, 18,615—Nassau							
Mersey Hospital†	Gen	Church	72	66	28	1,046	2,789
South Nassau Communities Hospital†	Gen	NPAasn	100	91	70	1,510	4,254
Rome, 34,214—Onondaga							
Onondaga County Hospital.....	Gen	County	200	183	8	82	1,730
Rome Hospital and Murphy Memorial Hospital†	Gen	City	83	79	28	927	3,084
Rome State School.....	MeDe	State	3,570	3,335	24	13	182
Roslyn, 972—Nassau							
St. Francis Sanatorium for Cardiac Children.....	Card	Church	173	152	..	..	160
Sackett Harbor, 1,962—Jefferson							
Station Hospital.....	Gen	Army	80	11	..	..	432
St. Albans, —Queens							
U. S. Naval Hospital*†	Gen	Navy	4,000	..	..	Estab. 1913	..
Salamanca, 9,011—Cattaraugus							
City Hospital.....	Gen	City	16	36	10	289	2,009
Salisbury Center, 331—Herkimer							
Pine Crest Sanatorium.....	TB	County	90	77	..	..	57
Sampson, —Ontario							
U. S. Naval Hospital*.....	Gen	Navy	1,729	..	..	Estab. 1913	..
Saranac Lake, 7,138—Franklin							
General Hospital†	Gen	NPAasn	50	27	9	119	1,042
Northwoods Sanatorium.....	TB	NPAasn	26	25	..	..	24
Prescott House.....	TB	Corp	20	20	..	..	20
Will Rogers Memorial Hosp.*†	TB	NPAasn	85	71	..	..	23
Saratoga Springs, 15,705—Saratoga							
Saratoga Hospital†	Gen	NPAasn	90	68	17	367	2,352
Schenectady, 87,519—Schenectady							
Eastern New York Orthopedic Hosp. School "Sunny View"	OrChil	NPAasn	40	21	..	..	32
Ellis Hospital*†	Gen	NPAasn	400	361	70	1,700	14,285
Schenectady County Tuberculosis Hospital (Glenridge Sanatorium)*†	TB	County	125	120	..	..	135
Seneca Falls, 6,452—Seneca							
Seneca Falls Hospital.....	Gen	City	36	19	10	190	692
Sherburne, 1,192—Chenango							
Chenango County Tuberculosis Hospital.....	TB	County	31	29	..	..	30
Sidney, 3,012—Delaware							
The Hospital.....	Gen	City	29	..	14	Estab. 1913	..
Sodus, 1,513—Wayne							
J. F. Myers Hospital.....	Gen	Indiv	27	14	7	90	399
Soyen, 500—Livingston							
Craig Colony.....	Epid	State	2,312	2,503	..	..	106
Southampton, 3,818—Suffolk							
Southampton Hospital*†	Gen	NPAasn	109	41	19	355	1,646
Stamford, 1,088—Delaware							
Bathgate Hospital.....	Gen	NPAasn	18	7	6	134	405
Stapleton (Staten Island P.O.), —Richmond							
U. S. Marine Hospital*†	Gen	USPHS	809	571	6	31	8,329
Staten Island, 174,441—Richmond							
Richmond Borough Hospital.....	Gen	City	38	9	..	..	254
Richmond Memorial Hosp.*†	Gen	NPAasn	100	72	18	306	1,758
St. Vincent's Hospital*†	Gen	Church	228	198	35	1,740	6,142
Seaside Hospital of St. John's Guild.....							
Sea View Hospital*†	TB	City	1,996	1,716	12	31	2,303
Staten Island Hospital*†	Gen	NPAasn	298	146	62	829	4,731
Suffern, 3,768—Rockland							
Good Samaritan Hospital†	Gen	Church	92	70	16	557	2,675
Summit, 50—Franklin							
Veterans Admin. Facility*†	TB	Vet	518	466	..	..	706
Syracuse, 205,967—Onondaga							
City Hospital*†	Gen	City	84	28	..	..	672
Crouse-Irving Hospital*†	Gen	NPAasn	215	196	30	1,592	7,015
General Hospital*†	Gen	NPAasn	127	101	43	1,073	3,532
Hospital of the Good Shepherd*†	Gen	NPAasn	195	115	..	..	4,167
Onondaga General Hospital.....	Gen	NPAasn	65	35	10	81	1,030
Onondaga Sanatorium*†	TB	County	255	211	..	..	291
Peoples Hospital.....	Gen	NPAasn	28	16	8	114	595
St. Joseph Hospital*†	Gen	Church	205	150	35	757	5,877
St. Mary's Maternity Hospital and Infants Asylum.....	Mat	Church	35	18	20	591	643
Syracuse Memorial Hosp.*†	Gen	NPAasn	204	214	10	1,689	6,791
Syracuse Psychopathic Hospital†	Ment	State	60	51	..	..	542
Twin Elms.....	N&M	Indiv	11	12	..	..	113
Tarrytown, 6,871—Westchester							
Tarrytown Hospital†	Gen	NPAasn	57	33	13	297	1,473
Thiells, 700—Rockland							
Letchworth Village.....	MeDe	State	3,690	4,020	6	21	377
Ticonderoga, 3,402—Essex							
Moses-Ludington Hospital*†	Gen	Corp	47	31	6	201	873
Troy, 70,304—Rensselaer							
Leonard Hospital†	Gen	NPAasn	125	130	25	814	3,512
Marshall Sanatorium.....	N&M	NPAasn	60	45	..	..	302
Price Memorial Hospital.....	Unit of Samaritan Hospital	Church	30	10	24	304	357
St. Joseph's Maternity Hosp.†	Gen	NPAasn	181	144	21	790	4,781
Samaritan Hospital*†	Gen	Church	272	160	24	423	4,241
Troy Hospital*†	Gen	Church	272	160	24	423	4,241
Trudeau, 600—Essex							
Trudeau Hospital*†	TB	NPAasn	200	196	..	..	222
Tupper Lake.....							
Mersey Co.	Gen	Church	30	16	6	79	568

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Tuxedo Park, 2,500—Orange							
Tuxedo Memorial Hospital†	Gen	NPAasn	33	19	7	91	562
Utica, 100,518—Onondaga							
Bronckes Sanatorium (Onondaga County Sanatorium)*†	Gen	County	182	161	..	..	130
Children's Hospital Home*†	OrTh	NPAasn	40	29	..	..	122
Taxton Hospital*†	Gen	NPAasn	106	113	24	693	3,542
Masonic Soldiers and Sailors Memorial Hospital.....	Gen	NPAasn	200	125	..	..	160
St. Elizabeth Hospital*†	Gen	Church	140	140	30	747	5,303
St. Luke's Home and Hosp.*†	Gen	Church	123	94	28	750	3,374
Utica General Hospital*†	Gen	City	120	36	14	96	2,141
Utica Memorial Hospital*†	Gen	NPAasn	76	62	24	446	3,226
Utica State Hospital*†	Ment	State	1,779	1,753	..	..	563
Valhalla, 2,200—Westchester							
Grasslands Hospital*†	Gen	County	810	600	15	137	4,515
Warsaw, 3,551—Wyoming							
Wyoming County Community Hospital*†	Gen	StateCo	122	100	20	472	2,381
Warsaw, 2,334—Orange							
St. Anthony's Hospital.....	Gen	Church	50	15	12	123	505
Waterloo, 4,010—Seneca							
Waterloo Memorial Hospital.....	Gen	NPAasn	25	20	6	161	596
Watertown, 34,385—Jefferson							
House of the Good Samaritan*†	Gen	NPAasn	150	114	36	583	3,333
Jefferson County Sanat.*†	TB	County	78	47	..	..	84
Mersey Hospital*†	Gen	Church	141	134	24	634	2,851
Waverly, 3,450—Tlona							
Tlona County General Hosp.*†	Gen	NPAasn	67	57	12	316	1,551
Wayland, 1,795—Steuben							
Wayland Hospital.....	Gen	Part	17	14	3	86	507
Wellsville, 5,942—Allegany							
Memorial Hospital of Wm. F. and Gertrude F. Jones.....	Gen	City	55	37	10	358	1,694
Westfield, 3,434—Cattaraugus							
Westfield Memorial Hospital.....	Gen	NPAasn	20	10	8	130	459
West Haverstraw, 2,533—Rockland							
New York State Reconstructive Home*†	OrChil	State	310	121	..	..	164
West Point, —Orange							
Station Hospital†	Gen	Army	158	79	8	80	3,470
White Plains, 40,327—Westchester							
Burke Convalescent Home.....	Conv	NPAasn	250	200	..	..	3,774
New York Hospital—Westchester Division*†	N&M	NPAasn	350	250	..	..	341
St. Agnes Hospital*†	Gen	Church	138	78	39	482	2,567
White Plains Hospital*†	Gen	NPAasn	178	142	24	541	5,016
Willard, 600—Seneca							
Willard State Hospital.....	Ment	State	3,104	3,229	..	..	430
Wingdale, 600—Dutchess							
Harlem Valley State Hospital*†	Ment	State	4,627	4,484	..	..	313
Woodhaven, —Queens							
St. Anthony's Hospital.....	TB	Church	350	338	..	..	737
Wynantskill, 200—Rensselaer							
Pawling Sanatorium.....	TB	County	118	92	..	..	110
Yaphank, 350—Suffolk							
Suffolk Home and Infirmary.....	GenChr	County	268	194	..	..	205
Yonkers, 142,589—Westchester							
Gray Oaks Hospital.....	TB	City	45	49	..	..	43
House of Rest at Sprain Ridge TB	TB	NPAasn	76	66	..	..	102
St. John's Riverside Hosp.*†	Gen	NPAasn	168	128	32	785	4,395
St. Joseph's Hospital*†	Gen	Church	177	84	20	384	2,367
Yonkers General Hospital*†	Gen	NPAasn	142	90	38	819	3,646
Yonkers Professional Hosp... Gen	Corp	Corp	100	55	26	426	2,911

Related Institutions

Albany, 130,577—Albany							
Albany's Hospital for Incurables.....	Incur	NPAasn	100	98	..	..	60
St. Margaret's House and Hospital.....	Inst	Church	50	40	..	..	67
Albion, 4,660—Orleans							
Albion State Training School.....	MeDe	State	484	327	3	9	111
Orleans Welfare Hospital.....	Gen	County	40	25	5	8	94
Alden, 951—Erie							
Erie County Penitentiary Hospital.....	Inst	County	27	6	..	..	79
Amityville, 5,038—Suffolk							
Brunswick Home.....	Gen	Corp	300	196	16	248	481
Bainbridge, 1,450—Chenango							
Bainbridge Hospital.....	Gen	Indiv	14	7	5	97	353
Bedford Hills, 2,000—Westchester							
Westfield State Farm.....	Inst	State	52	24	..	..	204
Binghamton, 78,869—Broome							
Binghamton Training School.....	MeDe	Indiv	55	52	..	..	8
Brooklyn, 2,608,285—Kings							
Brooklyn Hebrew Home and Hospital for Aged.....	Inst	NPAasn	704	620	..	..	146
Buffalo, 575,901—Erie							
Ingleside Home.....	Mat	NPAasn	46	27	30	121	157
Castile, 902—Wyoming							
Greene Sanitarium (Castile Sanitarium).....	Conv	Indiv	45	17	..	..	40
Eastview, 1,000—Westchester							
Solomon and Betty Loeb Memorial Home for Convalescents.....	Conv	NPAasn	108	89	..	..	1,207
Elmira, 45,106—Chemung							
Elmira Reformatory Hospital.....	Inst	State	97	16	..	..	812
Far Rockaway, —Queens							
Wave Crest Convalescent Home.....	OrChil	NPAasn	135	61	..	..	220

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Hawthorne, 2,000—Westchester							
Rosary Hill Home.....	Cancer	Church	100	95	..	...	191
Industry, 350—Monroe							
Hospital of State Agriculture and Industrial School.....	Inst	State	50	22	..	...	823
Iroquois, 40—Erie							
Thomas Indian School Hosp..	Inst	State	36	15	..	...	484
Ithaca, 19,730—Tompkins							
Ballou-Jones Hospital	Gen	Indiv	14	8	..	...	269
Reconstruction Home	Orth	NPAasn	100	65	..	...	95
Johnson City, 18,039—Broome							
Springer Private Hospital....	Mat	Indiv	19	12	14	100	149
Keene Valley, 511—Essex							
Keene Valley Neighborhood House and Hospital.....	Gen	NPAasn	11	6	2	36	122
Lake Ronkonkoma, 1,000—Suffolk							
Gary de Vabre Academy.....	McDe	Indiv	18	8	..	...	8
Millbrook, 1,340—Dutchess							
Cardinal Hayes Convalescent Home for Children.....	Conv	Church	75	52	..	...	449
Napanoch, 750—Ulster							
Institution for Male Defective Delinquents	McDe	State	28	12	..	...	317
Newark, 9,646—Wayne							
Newark State School.....	McDe	State	2,480	2,336	..	...	233
New York City, 4,582,269—New York							
Beth Abraham Home for Incurables	Incur	NPAasn	318	290	..	...	110
Bryant Sanitarium	Mat	Indiv	10	3	10	112	114
Hebrew Convalescent Home..	Conv	NPAasn	89	81	..	...	654
Home and Hospital of the Daughters of Israel.....	Inst	NPAasn	120	117	..	...	215
Home for Aged and Infirm Hebrews	Inst	NPAasn	52	38	..	...	847
Home for Dependents.....	Inst	City	1,847	1,884	..	...	1,180
Home for Incurables.....	Cancer	Church	348	336	..	...	284
House of Calvary.....	Cancer	Church	146	134	..	...	678
Jacob Siegel Memorial Hosp..	Unit of Home and Hospital of the Daughters of Israel						
National Hospital for Speech Disorders	Speech	NPAasn	...	238	..	...	3,515
St. Andrew's Convalescent Hospital	Conv	Church	24	14	..	...	244
St. Mary's Hospital for Children	Conv	Church	60	57	..	...	540
St. Rose's Free Home for Incurable Cancer	Cancer	Church	90	90	..	...	291
Niagara Falls, 78,029—Niagara							
Niagara Falls Municipal Hospital	Iso	City	38	15	..	...	183
Niskayuna, 500—Schenectady							
Belleve Maternity Home....	Mat	Indiv	53	34	54	1,137	1,144
Ogdensburg, 16,346—St. Lawrence							
St. John's Hospital.....	ChrConv	Church	35	9	..	...	44
Onondaga, 325—Onondaga							
Onondaga County Hospital..	Inst	County	306	302	..	...	505
Oxford, 1,713—Chenango							
New York State Woman's Relief Corps Home.....	Inst	State	75	68	..	...	126
Pelham, 1,918—Westchester							
Pelham Home for Children...	Card	NPAasn	80	25	..	...	27
Pleasantville, 4,454—Westchester							
Pleasantville Cottage School	Inst	NPAasn	27	5	..	...	318
Poughkeepsie, 40,478—Dutchess							
Baldwin House (Vassar College Infirmary)	Inst	NPAasn	35	19	..	...	1,157
Poughkeepsie City Home Infirmary	Inst	City	50	38	..	...	45
Queens Village, —Queens							
Queens Village Sanatorium...	Gen	Indiv	10	5	8	85	145
Rochester, 324,975—Monroe							
Convalescent Hospital for Children	Conv	NPAasn	60	42	..	...	64
Field Sanitarium	Conv	Indiv	26	20	..	...	110
Knorr Sanitarium	N&M	Indiv	35	20	..	...	61
Rockaway Park, —Queens							
Convalescent Home for Hebrew Children	OrthConv	NPAasn	104	94	..	...	220
Rye, 9,865—Westchester							
Halcyon Rest Sanitarium....	N&M	Indiv	52	46	..	...	156
Saranac Lake, 7,138—Franklin							
Franklin Manor	Inst	Indiv	15	12	..	...	24
.....	TB	Indiv	28	12	..	...	25
.....	Inst	County	65	55	..	...	200
.....	Iso	City	35	16	..	...	472
.....	Inst	City	1,302	1,202	..	...	786
Sailors' Snug Harbor Hosp..	Gen	NPAasn	192	110	..	...	313
State School, —Orange							
Hospital of New York State Training School for Boys..	Inst	State	25	12	..	...	702
Syracuse, 205,967—Onondaga							
Syracuse State School.....	McDe	State	1,166	979	..	...	93
Tupper Lake, 5,451—Franklin							
American Legion Mountain Camp	Conv	NPAasn	60	30	..	...	131
.....							
.....	Orth	NPAasn	63	56	..	...	90
Wallkill, 500—Ulster							
Wallkill State Prison Hosp..	Inst	State	18	8	..	...	260
Wassale, 330—Dutchess							
Wassale State School.....	McDe	State	4,408	4,471	6	11	294

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Williamsville, 3,614—Erie							
Josephine Goodyear Convalescent Home	Conv	Chil NPAasn	60	39	..	...	105
Woodbourne, 500—Sullivan							
Woodbourne Institution for Defective Delinquents	McDe	State	750	595	..	...	133
Yonkers, 142,589—Westchester							
Yonkers City Hospital for Communicable Diseases	Iso	City	87	13	..	...	206

NORTH CAROLINA

Hospitals and Sanatoriums

Albemarle, 4,060—Stanly							
Stanly General Hospital.....	Gen	NPAasn	40	27	8	126	1,637
Yadkin Hospital	Gen	NPAasn	40	26	11	404	1,676
Asheboro, 6,981—Randolph							
Barnes-Griffin Clinic	Gen	Part	24	19	8	320	1,207
Randolph Hospital.....	Gen	NPAasn	50	31	10	299	1,810
Asheville, 51,310—Buncombe							
Appalachian Hall	N&M	Corp	175	52	..	...	328
Asheville Mission Hospital.....	Gen	NPAasn	114	83	16	339	3,065
Aston Park Hospital.....	Gen	NPAasn	45	29	11	253	1,556
Highland Hospital	N&M	NPAasn	85	61	..	...	175
Norburn Hospital	Gen	NPAasn	40	31	2	9	1,137
St. Joseph's Hospital.....	Gen	Church	100	84	30	775	2,776
U. S. Naval Convalescent Hospital	Conv	Navy	404	...	...	Estab.	1943
Wesnoca	NervConv	Indiv	25	12	..	...	50
Zephyr Hill Sanatorium.....	TB	Indiv	30	22	..	...	34
Badin, 3,063—Stanly							
Badin Hospital	Gen	Part	23	6	7	59	394
Banner Elk, 344—Avery							
Grace Hospital.....	Gen	Church	75	59	15	276	1,332
Beaufort, 3,272—Curteret							
Potter Emergency Hospital..	Gen	NPAasn	12	7	4	117	353
Biltmore, 172—Buncombe							
Biltmore Hospital.....	Gen	NPAasn	55	43	15	257	1,778
Black Mountain, 1,042—Buncombe							
Bealmont Park Sanat.....	NervDrug	Corp	20	7	..	...	48
Fellowship Sanatorium of the Royal League	TB	NPAasn	25	12	..	...	15
Western North Carolina Sanatorium.....	TB	State	305	200	..	...	335
Brevard, 3,061—Transylvania							
Transylvania Community Hospital	Gen	NPAasn	25	7	8	114	591
Burlington, 12,198—Alamance							
Alamance County Sanatorium	TB	County	30	24	..	...	42
Alamance General Hospital..	Gen	NPAasn	42	29	5	318	1,744
Chapel Hill, 3,654—Orange							
U. S. Naval Air Station Dispensary	Gen	Navy	56	...	...	...	...
Charlotte, 100,899—Mecklenburg							
Charlotte Eye, Ear and Throat Hospital.....	ENT	Part	22	19	..	...	2,229
Charlotte Memorial Hospital.....	Gen	NPAasn	295	238	30	584	8,193
Good Samaritan Hospital.....	Gen	Church	87	68	25	665	2,098
Mercy Hospital.....	Gen	Church	132	128	36	1,341	5,661
Presbyterian Hospital.....	Gen	Church	173	167	32	902	5,337
Cherokee, 500—Swain							
Eastern Cherokee Indian Hospital	Gen	IA	28	16	7	95	528
Cherry Point, —Craven							
U. S. Marine Corps Air Station Dispensary	Gen	Navy	407	306	..	...	3,673
Columbia, 1,000—Tyrrell							
Columbia Hospital	Gen	Indiv	21	8	6	116	841
Concord, 15,572—Cabarrus							
Cabarrus County Hospital.....	Gen	County	111	100	40	1,124	5,042
Crossnore, 266—Avery							
Garrett Memorial Hospital...	Gen	NPAasn	20	11	11	118	485
Durham, 60,195—Durham							
Duke Hospital.....	Gen	NPAasn	554	409	50	1,223	12,845
Lincoln Hospital.....	Gen	NPAasn	99	67	13	265	1,926
McPherson Hospital.....	ENT	Indiv	30	16	..	...	1,450
Watts Hospital.....	Gen	NPAasn	200	169	25	1,003	7,475
Elizabeth City, 11,564—Pasquotank							
Albemarle Hospital	Gen	CyCo	48	35	9	151	1,100
Elkin, 2,734—Surry							
Hugh Chatham Memorial Hospital	Gen	Church	60	32	14	263	1,886
F.....	Gen	Part	30	8	5	50	310
F.....							
.....	TB	County	31	23	..	...	52
Highsmith Hospital.....	Gen	NPAasn	130	98	14	397	4,623
R. L. Fittman Hospital.....	Gen	NPAasn	88	62	12	472	2,655
Veterans Admin. Facility.....	Gen	Vet	310	163	..	...	1,718
Fletcher, 500—Henderson							
Mountain Sanitarium and Hospital	Gen	Church	60	41	10	94	883
Fort Bragg, —Cumberland							
Station Hospital.....	Gen	Army	330	174	9	95	7,013
Franklin, 1,240—Macon							
Angel Clinic	Gen	Indiv	30	21	2	...	671
Angel Hospital	Gen	Indiv	53	21	8	96	854
Gastonia, 21,313—Gaston							
City Hospital	Gen	Corp	75	50	15	229	1,673
Garrison General Hospital...	Gen	NPAasn	50	26	10	459	1,424

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinetts	Number of Births	Admissions †
Gaston County Negro Hosp. Gen	County	County	22	9	2	10	317
Gastonia Eye, Ear, Nose and Throat Hospital..... ENT	Indiv	Indiv	10	7	..	..	621
North Carolina Orthopedic Hospital.....	Orth	State	160	156	..	..	241
Goldshoro, 17,274—Wayne	Gen	NPAasn	106	67	9	258	2,725
State Hospital.....	Ment	State	2,600	2,470	..	..	670
Greensboro, 69,310—Gulford	Gen	NPAasn	61	45	17	405	2,631
Piedmont Memorial Hosp. A. Gen	Gen	NPAasn	69	35	8	123	1,103
L. Richardson Memorial Hos. pitlao.....	Gen	Church	80	57	15	456	2,539
St. Leo's Hospitalao.....	Gen	NPAasn	42	32	10	313	1,359
Sternberger Hospital for Women and Children.....	Gen	Corp	80	72	16	397	2,886
Wesley Long Hospital.....	Gen	NPAasn	60	34	7	189	2,089
Greenville, 12,674—Pitt	Gen	NPAasn	47	48	6	204	2,025
Pitt General Hospital.....	Gen	Church	50	24	3	52	584
Hamlet, 5,111—Richmond	Gen	NPAasn	51	38	17	357	2,143
Hamlet Hospital.....	Gen	NPAasn	50	20	12	227	1,458
Henderson, 7,647—Vance	Gen	NPAasn	35	12	6	146	764
Jubilee Hospital.....	Gen	Indiv	55	31	20	550	1,784
Marin Parham Hospital.....	Gen	NPAasn	80	59	16	142	2,546
Hendersonville, 5,351—Henderson	Gen	NPAasn	38	25	6	525	1,726
Patton Memorial Hospital.....	Gen	County	170	140	..	..	134
Hickory, 14,487—Catawba	Gen	County	140	110	..	..	135
Hickory Memorial Hospital.....	Gen	NPAasn	29	12	6	110	584
Richard Baker Hospital.....	Gen	NPAasn	73	54	12	519	2,729
High Point, 5,495—Gulford	Gen	NPAasn	40	27	5	312	1,693
Burrus Memorial Hospitalao.....	Gen	NPAasn	59	..	8	122	..
Gulford General Hospital.....	Gen	NPAasn	45	25	5	222	2,681
Hunterville, 765—Mecklenburg	Gen	NPAasn	25	17	8	321	1,164
Mecklenburg Sanatorium.....	TB	County	35	13	6	122	674
Jameson, 900—Gulford	TB	County	25	14	12	303	1,664
Gulford County Sanatorium.....	TB	County	58	30	10	277	2,404
Jefferson, 501—Ashe	Gen	Corp	35	20	6	..	1,218
Ashe County Memorial Hosp. Gen	Gen	NPAasn	75	49	15	592	3,210
Kinston, 15,388—Lenoir	Gen	NPAasn	75	53	10	437	2,562
Memorial General Hospitalao Gen	Gen	NPAasn	41	25	6	413	1,939
Parrott Memorial Hospital.....	Gen	NPAasn	60	35	10	292	1,708
Laurinburg, 5,655—Scotland	Gen	NPAasn	60	45	10	461	2,663
Laurinburg Hospital.....	Gen	NPAasn	32	18	8	169	776
Leaksville, 1,886—Rockingham	Gen	City	75	42	..	..	136
Leaksville General Hospitalao Gen	Gen	NPAasn	100	55	20	472	3,619
Lenoir, 7,599—Caldwell	Gen	State	2,630	2,601	..	..	615
Blackwelder Hospital.....	Gen	NPAasn	60	53	14	189	2,217
Caldwell Hospital.....	Gen	Corp	25	16	12	184	783
Clinton, 10,559—Davidson	Gen	Corp	31	28	..	..	50
Davidson Hospital.....	Gen	County	30	19	4	51	702
Lincolnton, 4,525—Lincoln	Gen	Part	41	29	3	143	1,968
Gordon Crowell Memorial Hospitalao.....	Gen	Navy	1,172	..	23	Estab.	1943
Reeves Gamble Hospital.....	Gen	NPAasn	37	32	10	364	1,551
Lumberton, 5,803—Robeson	Gen	NPAasn	60	31	14	238	2,021
Baker Sanatorium.....	Gen	NPAasn	75	42	..	..	136
Thompson Memorial Hosp.ao Gen	Gen	NPAasn	100	55	20	472	3,619
Marion, 2,889—McDowell	Gen	State	2,630	2,601	..	..	615
Marion General Hospital.....	Gen	NPAasn	60	53	14	189	2,217
Monroe, 6,475—Union	Gen	Corp	25	16	12	184	783
Ellen Fitzgerald Hospital.....	Gen	Corp	31	28	..	..	50
Mooreville, 6,682—Iredell	Gen	County	30	19	4	51	702
Lowrance Hospital.....	Gen	Part	41	29	3	143	1,968
Morehead City, 3,635—Currier	Gen	NPAasn	32	18	8	169	776
Morehead City Hospital.....	Gen	City	75	42	..	..	136
Morganton, 7,670—Burke	Gen	NPAasn	100	55	20	472	3,619
Brooklands Sanatorium.....	N&M	Part	75	42	..	..	136
Grace Hospital.....	Gen	NPAasn	100	55	20	472	3,619
State Hospital.....	Ment	State	2,630	2,601	..	..	615
Mount Airy, 6,286—Surry	Gen	NPAasn	60	53	14	189	2,217
Martin Memorial Hospitalao.....	Gen	Corp	25	16	12	184	783
Murphy, 1,874—Cherokee	Gen	Corp	31	28	..	..	50
Petrie Hospital.....	Gen	County	30	19	4	51	702
Nashville, 1,171—Nash	Gen	Part	41	29	3	143	1,968
R. R. Gay Nash County Tuberculosis Sanatorium.....	TB	County	31	28	..	..	50
New Bern, 11,815—Craven	Gen	Church	30	19	4	51	702
Good Shepherd Hospital.....	Gen	Part	41	29	3	143	1,968
St. Luke's Hospital.....	Gen	Navy	1,172	..	23	Estab.	1943
New River, —Craven	Gen	NPAasn	37	32	10	364	1,551
U. S. Naval Hospital.....	Gen	NPAasn	60	31	14	238	2,021
Newton, 5,407—Catawba	Gen	NPAasn	75	42	..	..	136
Catawba General Hospital.....	Gen	NPAasn	100	55	20	472	3,619
North Wilkesboro, 4,478—Wilkes	Gen	State	2,630	2,601	..	..	615
Wilkes Hospital.....	Gen	NPAasn	60	53	14	189	2,217
Oteen, 1,200—Buncombe	TB	Vet	828	701	..	..	1,079
Veterans Admin. Facility.....	TB	Indiv	36	27	..	..	141
Oxford, 3,931—Granville	Gen	NPAasn	25	16	5	119	708
Granville Hospital.....	Gen	NPAasn	16	11	1	34	486
Susie Clayton Cheatham Memorial Hospital.....	Gen	NPAasn	36	27	..	..	141
Pinebluff, 330—Moore	N&M	Indiv	36	27	..	..	141
Pinebluff Sanatorium.....	N&M	Indiv	36	27	..	..	141
Pinehurst, 1,600—Moore	Gen	NPAasn	85	61	16	298	2,036
Moore County Hospitalao.....	Gen	NPAasn	85	61	16	298	2,036
Raleigh, 46,897—Wake	Inst	State	134	63	..	..	894
Central Prison Hospital.....	Inst	Corp	40	31	9	239	1,184
Mary Elizabeth Hospital.....	Gen	NPAasn	208	171	24	888	6,676
Rex Hospital.....	Gen	Unit of State Hospital	100	60	18	330	2,103
Royster Medical Center.....	Gen	Church	100	60	18	330	2,103
St. Agnes Hospital.....	Gen	State	2,550	2,454	..	..	807
State Hospital.....	Ment	State	2,550	2,454	..	..	807
Wake County Sanatorium.....	TB	CyCo	50	50	..	..	51

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinetts	Number of Births	Admissions †
Reldsville, 10,387—Rockingham	Gen	NPAasn	70	45	8	266	2,156
Annie Penn Memorial Hosp. Gen	Gen	NPAasn	85	89	18	528	3,688
Roanoke Rapids, 8,545—Harris	Gen	NPAasn	50	27	..	..	728
Roanoke Rapids Hospital.....	Gen	NPAasn	110	82	15	333	3,194
Rocky Mount, 25,568—Nash	Gen	NPAasn	74	40	6	239	1,806
Atlantic Coast Line Hosp. A. Indus	NPAasn	Part	12	7	5	191	654
Park View Hospitalao.....	Gen	Part	9	2	3	134	339
Rocky Mount Sanitariumao.....	Gen	NPAasn	28	..	..	..	No data supplied
Speight-Stone-Bunn Clinic-Hospital.....	Gen	Part	58	32	3	81	1,860
Roseboro, 939—Sampson	Gen	NPAasn	120	93	28	658	3,374
Brewer-Starling Clinic.....	Gen	Part	650	604	..	..	724
Roxboro, 4,599—Person	Gen	County	50	33	8	306	1,852
Community Hospital.....	Gen	NPAasn	101	69	16	563	3,034
Rutherford, 2,326—Rutherford	Gen	NPAasn	22	12	6	60	800
Rutherford Hospitalao.....	Gen	NPAasn	35	18	6	93	551
Salisbury, 10,037—Rowan	Gen	NPAasn	50	18	7	99	746
Rowan Memorial Hospital.....	Gen	NPAasn	130	98	20	226	3,996
Sanatorium, 200—Hoke	Gen	NPAasn	65	53	8	230	2,358
North Carolina Sanatorium for the Treatment of Tuberculosis.....	TB	State	650	604	..	..	724
Sanford, 4,960—Lee	Gen	County	50	33	8	306	1,852
Lee County Hospital.....	Gen	CyCo	101	69	16	563	3,034
Shelby, 14,037—Cleveland	Gen	NPAasn	22	12	6	60	800
Shelby Hospitalao.....	Gen	NPAasn	35	18	6	93	551
Siler City, 2,197—Chatham	Gen	CyCo	50	18	7	99	746
Chatham Hospital.....	Gen	NPAasn	130	98	20	226	3,996
Smithfield, 3,678—Johnston	Gen	NPAasn	65	53	8	230	2,358
Johnston County Hospital.....	Gen	NPAasn	28	14	6	85	750
Southport, 1,760—Brunswick	Gen	CyCo	50	18	7	99	746
J. Arthur Dasher Memorial Hospital.....	Gen	CyCo	50	18	7	99	746
Statesville, 11,440—Iredell	Gen	NPAasn	130	98	20	226	3,996
Davis Hospitalao.....	Gen	NPAasn	65	53	8	230	2,358
H. P. Long Hospitalao.....	Gen	NPAasn	28	14	6	85	750
Sylvan, 1,400—Jackson	Gen	NPAasn	28	14	6	85	750
C. J. Harris Community Hospital.....	Gen	NPAasn	28	14	6	85	750
Tarboro, 7,118—Edgecombe	Gen	Indiv	8	4	5	31	145
Bass Memorial Hospital.....	Gen	NPAasn	55	27	10	196	1,374
Edgecombe General Hospital.....	Gen	NPAasn	50	29	14	240	1,181
Thomasville, 11,011—Davidson	Gen	NPAasn	29	13	7	123	771
City Memorial Hospital.....	Gen	NPAasn	29	13	7	123	771
Tryon, 2,043—Polk	Gen	NPAasn	44	18	10	159	1,130
St. Luke's Hospital.....	Gen	NPAasn	40	25	10	162	1,104
Valdese, 2,615—Burke	Gen	NPAasn	14	9	3	62	358
Valdese General Hospital.....	Gen	NPAasn	69	43	6	299	2,141
Wadesboro, 3,587—Anson	Gen	NPAasn	75	47	10	424	1,950
Anson Sanatorium.....	Gen	NPAasn	40	25	10	162	1,104
Washington, 8,569—Beaufort	Gen	Indiv	14	9	3	62	358
Fowle Memorial Hospital.....	Gen	NPAasn	69	43	6	299	2,141
Taylor Hospitalao.....	Gen	NPAasn	75	47	10	424	1,950
Waynesville, 2,940—Haywood	Gen	County	75	47	10	424	1,950
Haywood County Hospital.....	Gen	NPAasn	57	35	17	274	2,082
Whiteville, 3,011—Columbus	Gen	NPAasn	57	35	17	274	2,082
Columbus County Hospital.....	Gen	Indiv	35	18	6	77	939
Williamston, 3,966—Martin	Gen	NPAasn	35	25	5	..	1,186
Brown Community Hospital.....	Gen	NPAasn	35	25	5	..	1,186
Wilmington, 33,407—New Hanover	Gen	NPAasn	35	25	5	..	1,186
Babies Hospital.....	Chil	NPAasn	35	25	5	..	1,186
Bulluck Hospital.....	Gen	Corp	35	25	5	..	1,186
Community Hospital.....	Gen	CyCo	49	51	16	468	2,144
James Walker Memorial Hospital.....	Gen	NPAasn	210	188	50	2,014	8,451
Wilson, 10,234—Wilson	Gen	NPAasn	48	35	14	325	1,786
Carolina General Hospitalao.....	Gen	NPAasn	48	35	14	325	1,786
Eastern North Carolina Sanatorium.....	TB	State	185	181	..	..	287
Mercy Hospital.....	Gen	CyCo	41	18	2	37	514
Wilson County Tuberculosis Sanatorium.....	TB	County	40	26	..	..	47
Woodard-Herring Hospitalao.....	Gen	NPAasn	76	46	6	217	1,829
Winston-Salem, 79,815—Forsyth	Gen	City	397	228	43	1,411	9,394
City Hospital.....	White Division of City Hospital	City	165	115	7	166	1,442
City Memorial Hospital.....	Gen	County	160	119	..	..	96
Forsyth County Hospital.....	Gen	County	160	119	..	..	96
Forsyth County Sanatorium.....	TB	County	160	119	..	..	96
Kate Bittling Reynolds Memorial Hospital.....	Colored Division of City Hospital	Colored Division of City Hospital	270	207	50	941	6,663
North Carolina Baptist Hospital.....	Gen	Church	270	207	50	941	6,663

Related Institutions

Asheville, 51,310—Buncombe								
Asheville Orthopedic Home...	Orth	NPAssn	28	19	..	...	110	
Pisgah Sanitarium and Hosp. Gen	Church	30	12	3	5	...	199	
Sunset Heights	TB	Corp	20	19	..	...	50	
Violet Hill Sanatorium.....	TB	Indiv	37	35	..	...	45	
Charlotte, 100,899—Mecklenburg								
Florence Crittenton Home...	Mat	NPAssn	25	23	12	40	55	
Clemmons, 200—Forsyth								
Casstevens Clinic	Gen	Indiv	8	2	3	62	155	
Davidson, 1,550—Mecklenburg								
Preyer Infirmary	Inst	NPAssn	27	2	..	...	217	
Goldsboro, 17,274—Wayne								
Rest Home	Conv	Indiv	12	6	..	...	343	
.....								
..... tuberculosis								
Sanitarium	TB	County	28	18	..	...	35	
Henderson, 7,647—Vance								
Scott Parker Sanitarium.....	TB	County	14	12	..	...	4	

NORTH CAROLINA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Kinston, 15,388—Lenoir							
Caswell Training School.....	MeDe	State	826	817	..	...	37
North Wilkesboro, 4,478—Wilkes							
Wilkes County Tuberculosis Hut	TB	County	14	6	..	...	9
Raleigh, 46,897—Wake							
McCauley Private Hospital..	Gen	Indlv	10	5	2	35	129
Tarboro, 7,148—Edgecombe							
Edgecombe County Tuberculosis Sanatorium	TB	County	31	24	..	...	29

NORTH DAKOTA

Hospitals and Sanatoriums

Belcourt, 200—Rolette							
Turtle Mountain Hospital... Gen	IA		42	28	10	159	1,095
Bismarck, 15,496—Burleigh							
Bismarck Evangelical Hosp.▲ Gen	Church		128	109	12	256	3,120
St. Alexis Hospital▲..... Gen	Church		130	126	20	473	3,783
Bottineau, 1,739—Bottineau							
St. Andrew's Hospital..... Gen	Church		75	53	12	220	1,640
Carrington, 1,850—Foster							
Carrington Hospital	Church		25	16	8	86	614
Crosby, 1,404—Divide							
St. Luke's Hospital..... Gen	Church		42	11	8	91	377
Devils Lake, 6,204—Ramey							
General Hospital..... Gen	NPAasn		50	34	8	111	1,773
Mercy Hospital▲..... Gen	Church		100	51	26	289	2,340
Dickinson, 5,839—Stark							
St. Joseph's Hospital..... Gen	Church		86	46	14	406	1,900
Drayton, 688—Pembina							
Drayton Hospital	Indlv		13	10	6	66	439
Elbowoods, 175—McLean							
Fort Berthold Indian Hosp.. Gen	IA		25	13	6	47	505
Fargo, 32,580—Cass							
St. John's Hospital▲..... Gen	Church		180	131	35	752	4,312
St. Luke's Hospital▲..... Gen	Church		118	87	20	397	3,530
Veterans Admin. Facility▲... Gen	Vet		173	129	..	...	1,437
Fort Totten, 100—Benson							
Fort Totten Indian Hospital. Gen	IA		31	14	4	39	549
Fort Yates, 1,000—Sioux							
Standing Rock Indian Hosp.. Gen	IA		47	20	8	51	359
Grafton, 4,070—Walsh							
Grafton Deaconess Hospital Gen	Church		60	48	10	394	1,718
Grand Forks, 20,228—Grand Forks							
Grand Forks Deaconess Hospital▲..... Gen	NPAasn		85	80	20	423	3,648
St. Michael's Hospital▲..... Gen	Church		65	53	15	397	2,445
Harvey, 1,851—Wells							
St. Aloisius Hospital..... Gen	Church		40	27	12	328	1,511
Jamestown, 8,700—Stateman							
Jamestown Hospital	NPAasn		55	42	12	163	1,405
North Dakota State Hospital for Insane▲..... Gen	State		2,129	2,018	..	...	446
Trinity Hospital..... Gen	Church		88	46	12	230	1,726
Kenmare, 1,588—Ward							
Kenmare Deaconess Hospital. Gen	Church		33	21	8	172	865
Langdon, 1,546—Cavalier							
Mercy Hospital	Church		37	28	12	265	1,465
Mandan, 6,635—Morton							
Mandan Deaconess Hospital.. Gen	Church		39	22	8	265	1,953
Mayville, 1,351—Traill							
Union Hospital	NPAasn		16	9	7	123	438
McVie, 548—Nelson							
Community Hospital	Corp		14	8	4	63	250
Minot, 16,577—Ward							
St. Joseph's Hospital▲..... Gen	Church		131	83	21	402	2,863
Trinity Hospital▲..... Gen	Church		183	146	32	684	5,556
New River, 1,367—Barnes							
St. Mary's Hospital..... Gen	Church		40	16	6	110	712
Northwood Deaconess Hosp.. Gen	NPAasn		25	13	6	93	542
Oakes, 1,663—Dickey							
Mercy Hospital	Church		12	7	6	125	330
Rolette, 460—Rolette							
Community Hospital	NPAasn		20	9	4	42	325
Rolla, 1,008—Rolette							
Rolla Community Hospital... Gen	City		26	15	6	137	704
Rugby, 2,215—Pierce							
Good Samaritan Hospital▲. Gen	Church		75	54	15	343	3,517
San Haven, —Rolette							
North Dakota State Tuberculosis Sanatorium▲..... TB	State		363	298	..	...	241
Shannon, 271—Stark							
Stark Hospital. Gen	City		15	10	4	74	522
Wahpeton, 3,747—Richland							
St. Mary Hospital	Church		100	53	15	226	1,890
Williston, 5,700—Williams							
Good Samaritan Hospital▲. Gen	Church		37	32	10	228	2,076
Mercy Hospital▲..... Gen	Church		100	45	13	264	1,380

Related Institutions

Bismarck, 15,496—Burleigh							
North Dakota State Penitentiary Hospital	Inst	State	28	14	..	...	152
Elgin, 583—Grant							
Elgin Hospital	Indlv		17	8	6	100	526

NORTH DAKOTA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Fargo, 32,580—Cass							
Cass County Hospital.....	Gen	County	30	20	4	22	374
City Detention Hospital.....	Iso	City	40	21	..	...	102
Florence Crittenton Home....	Mat	NPAasn	78	18	6	56	52
Grafton, 4,070—Walsh							
Grafton State School.....	MeDe	State	1,034	960	..	...	102

OHIO

Hospitals and Sanatoriums

Akron, 244,791—Summit							
Akron Clinic Hospital.....	Gen	Part	12	6	..	...	582
Children's Hospital▲.....	Chil	NPAasn	110	90	..	...	5,033
City Hospital▲.....	Gen	NPAasn	325	299	48	2,863	10,703
Edwin Shaw Sanatorium▲.....	TB	County	204	147	..	...	182
Peoples Hospital▲.....	Gen	NPAasn	165	165	35	1,966	8,837
St. Thomas Hospital▲.....	Gen	Church	148	123	27	1,319	5,592
Alliance, 22,405—Stark							
Alliance City Hospital.....	Gen	City	85	59	18	788	2,495
Amherst, 2,890—Lorain							
Pleasant View Sanatorium... TB	County		96	75	..	...	81
Ashland, 12,453—Ashland							
Samaritan Hospital.....	Gen	NPAasn	48	32	12	523	1,605
Ashtabula, 21,405—Ashtabula							
Ashtabula General Hospital. Gen	NPAasn		61	54	15	438	2,159
Athens, 7,690—Athens							
Athens State Hospital.....	Ment	State	1,878	1,795	..	...	254
Sheltering Arms Hospital... Gen	Part		50	26	7	140	972
Barberton, 24,028—Summit							
Citizens Hospital	Gen	NPAasn	72	45	25	686	2,055
Barnesville, 5,662—Belmont							
Barnesville Hospital	Gen	NPAasn	15	7	6	117	375
Bedford, 7,380—Cuyahoga							
Bedford Municipal Hospital. Gen	City		37	27	15	398	2,265
Bellaire, 13,799—Belmont							
City Hospital▲.....	Gen	NPAasn	45	36	5	410	1,248
Bellevue, 6,127—Huron							
Bellevue Hospital	Gen	NPAasn	37	19	10	70	905
Berea, 6,025—Cuyahoga							
Community Hospital▲.....	Gen	NPAasn	37	28	10	271	1,181
Brecksville, 1,900—Cuyahoga							
Veterans Admin. Facility▲... Gen	Vet		269	232	..	...	2,530
Bryan, 5,404—Williams							
Cameron Hospitals	Gen	NPAasn	16	12	5	100	624
Bucyrus, 9,727—Crawford							
Bucyrus City Hospital.....	Gen	City	51	34	14	464	1,585
Cambridge, 15,044—Guernsey							
St. Francis Hospital.....	Gen	NPAasn	35	21	7	154	1,002
Swan Hospital	Gen	NPAasn	29	11	4	80	358
Canton, 108,401—Stark							
Aultman Hospital▲.....	Gen	NPAasn	160	144	30	1,560	6,332
Little Flower Hospital.....	Unit of Mercy Hospital		220	199	45	1,939	8,361
Mercy Hospital▲.....	Gen	Church	166	111	..	...	158
Molly Stark Sanatorium.....	TB	County	166	111	..	...	158
Celina, 4,841—Mercer							
Gibbons Hospital	Gen	NPAasn	30	23	8	391	1,180
Otis Hospital	Gen	NPAasn	26	10	4	115	597
Chagrin Falls, 2,505—Cuyahoga							
Windsor Hospital▲.....	N&M	Corp	90	74	..	...	575
Chillicothe, 20,129—Ross							
Chillicothe Hospital▲.....	Gen	NPAasn	60	31	17	290	858
Federal Reformatory Hosp.▲	Inst	USPHS	70	29	..	...	1,097
Mt. Logan Sanatorium.....	TB	Counties	64	60	..	...	52
Veterans Admin. Facility▲... Ment	Vet		1,013	1,000	..	...	693
Cincinnati, 455,610—Hamilton							
Bethesda Hospital▲.....	Gen	Church	219	240	60	2,057	9,267
Children's Hospital▲.....	Chil	Church	208	158	..	...	5,663
Christ Hospital▲.....	Gen	Church	326	282	55	1,833	10,079
Christian R. Holmes Hosp.▲... Gen	City		52	47	..	...	1,358
Cincinnati Gen. Hosp.▲.....	Gen	City	900	614	65	2,078	14,106
Cincinnati Sanitarium▲.....	N&M	Corp	75	74	..	...	336
Deaconess Hospital▲.....	Gen	Church	168	127	30	750	4,408
Good Samaritan Hosp.▲.....	Gen	Church	539	441	125	2,458	16,133
Hamilton County Home and Chronic Disease Hospital.. Chr	County		260	254	..	...	521
Hamilton County Tuberculosis Hospital▲.....	TB	County	583	513	..	...	521
Jewish Hospital▲.....	Gen	NPAasn	260	237	40	1,379	5,672
Longview State Hospital▲... Ment	State		2,827	2,756	..	...	482
Ohio Hospital for Women and Children	Unit of Bethesda Hospital		50	25	18	322	1,186
Our Lady of Mercy Hospital Gen	Church		200	126	30	589	4,281
St. Mary's Hospital▲.....	Gen	Church	23	11	12	222	555
Circleville, 7,982—Pickaway							
Berger Hospital	Gen	City	23	11	12	222	555
Cleveland, 878,336—Cuyahoga							
Babies and Childrens Hosp.. Unit of University Hospitals			25	14	25	724	777
Hospital▲.....	Mat	Church	1,588	1,159	50	691	10,967
City Hospital▲.....	Gen	City	1,588	1,159	50	691	10,967
City Psychopathic Hospital.. Unit of City Hospital							
Cleveland Clinic Foundation							
Hospital▲.....	Gen	NPAasn	250	223	..	...	7,118
Cleveland State Hospital▲... Ment	State		2,000	2,531	..	...	618
East 55th Street Hospital.....	Gen	Corp	60	3	12	3	26
Evangelical Deaconess Hosp.▲	Gen	Church	164	98	41	1,351	4,763
Fairview Park Hosp.▲.....	Gen	Church	150	132	51	1,791	6,281
Glennville Hospital▲.....	Gen	NPAasn	105	81	30	912	3,472
Grace Hospital▲.....	Gen	NPAasn	76	69	12	460	2,554
Huron Road Hospital.....	See East Cleveland						

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
John H. Lowman Memorial Pavilion	Unit of City Hospital						
Lakeside Hospital	Unit of University Hospitals						
Leonard C. Hanna House	Unit of University Hospitals						
Lutheran Hospital *Ao	Gen Church		127	116	33	1,134	1,813
Maternity Hospital	Unit of University Hospitals						
Mount Sinai Hospital *Ao	Gen NPAssn		225	192	45	1,372	8,017
Polyclinic Hospital A	Gen NPAssn		105	84	20	893	1,161
St. Alexis Hospital *Ao	Gen Church		220	182	..	..	7,762
St. Ann's Maternity Hosp. Ao, Mat	Church		67	58	59	2,583	2,720
St. John's Hospital *Ao	Gen Church		218	189	57	1,700	7,291
St. Luke's Hospital *Ao	Gen Church		397	280	65	1,820	10,289
St. Vincent Charity Hospital *Ao	Gen Church		295	232	..	..	7,349
U. S. Marine Hospital A	USPHS		306	236	..	..	3,200
University Hospital *Ao	Gen NPAssn		777	605	168	3,121	16,211
Woman's Hospital A	Gen NPAssn		93	75	20	923	4,078
Columbus, 50, 48, 1 Franklin Children's Hospital *Ao	Chil NPAssn		132	71	..	..	2,477
Columbus Convalescent Hospital	Conv Indiv		40	29	..	..	85
Columbus State Hospital *Ao	Ment State		2,517	2,192	..	..	477
Franklin County Tuberculosis Hospital *Ao	TB County		149	269	..	..	316
Grant Hospital *Ao	Gen NPAssn		273	218	40	1,584	8,621
McMillen Sanitarium	N&M Corp		40	25	..	..	214
Mercy Hospital A	Gen NPAssn		65	55	12	174	901
Mount Carmel Hospital *Ao	Gen Church		259	208	59	1,672	8,138
St. Ann's Maternity Hosp. A, Mat	Church		23	21	25	1,006	1,000
St. Anthony Hospital	Gen Church		262	189	..	..	2,699
St. Francis Hospital *Ao	Gen State		165	103	..	..	3,636
Starling Loving University Hospital *Ao	Gen State		267	198	35	941	6,167
Station Hospital A	Gen Army		179	119	3	29	2,163
White Cross Hospital *Ao	Gen Church		214	211	10	2,027	9,185
Conneaut, 9,235—Ashtabula Brown Memorial Hospital	Gen NPAssn		28	23	12	410	1,312
Coschocton, 11,709—Coschocton Coschocton City Hospital	Gen City		63	32	29	152	1,872
Crestline, 4,337—Crawford Crestline Emergency Hosp.	Gen NPAssn		21	8	7	124	439
Cuyahoga Falls, 20,546—Summit Fair Oaks Villa Sanitarium	N&M NPAssn		65	55	..	..	719
Dayton, 210,718—Montgomery Dayton State Hospital	Ment State		1,868	1,726	..	..	457
Good Samaritan Hospital *Ao	Gen Church		265	239	85	2,911	9,629
Miami Valley Hospital *Ao	Gen NPAssn		385	332	60	2,166	12,184
St. Ann's Maternity Hosp.	Unit of St. Elizabeth Hospital						
St. Elizabeth Hospital *Ao	Gen Church		350	267	35	2,055	11,261
Stillwater Sanatorium	TB Counties		103	98	..	..	151
Defiance, 9,744—Defiance Defiance Hospital	Gen NPAssn		35	22	10	429	1,339
Dennison, 4,112—Tuscarawas Twin City Hospital	Gen NPAssn		32	22	9	368	932
Dover, 9,491—Tuscarawas Union Hospital	Gen NPAssn		60	57	15	576	1,723
East Cleveland, 79,495—Cuyahoga Huron Road Hospital *Ao	Gen NPAssn		271	220	81	2,266	9,662
East Liverpool, 21,555—Columbiana East Liverpool City Hosp. Ao	Gen City		83	80	17	867	3,261
Elyria, 25,120—Lorain Elyria Memorial Hospital and Gates Hospital for Crippled Children Ao	Gen NPAssn		125	88	36	862	3,553
Fairfield, 2,749—Greene Station Hospital	Gen Army		40	11	..	..	687
Findlay, 20,225—Hancock Findlay Hospital A	Gen NPAssn		64	49	14	670	2,181
Fremont, 14,710—Sandusky Community Hospital	Gen NPAssn		14	10	4	43	381
Memorial Hospital A	Gen NPAssn		56	48	17	640	2,256
Gallion, 8,655—Crawford Gallion City Hospital	Gen City		35	23	10	321	1,202
Gallipolis, 7,832—Gallia Holzer Hospital Ao	Gen Part		64	49	7	299	2,100
Ohio Hospital for Epileptics, Epil	State		2,122	1,939	..	..	163
Green Springs, 930—Sandusky and Seneca Oak Ridge Sanatorium	TB Indiv		70	62	..	..	104
Greenville, 7,745—Darke Wayne Hospital	Gen NPAssn		48	36	17	471	1,718
Hamilton, 50,592—Butler Fort Hamilton Hospital	Gen NPAssn		86	66	21	568	2,671
Mercy Hospital *Ao	Gen Church		240	110	59	959	5,564
Hillsboro, 4,713—Highland Hillsboro Hospital	Gen NPAssn		19	9	4	135	520
Ironton, 15,851—Lawrence Charles S. Gray Deaconess Hospital	Gen NPAssn		60	16	5	178	800
Lawrence County General Hospital	Gen County		65	37	12	483	1,929
Kenton, 7,593—Hardin McKittick Hospital	Gen NPAssn		25	17	5	73	527
San Antonio Hospital	Gen Church		35	27	8	225	863
Lacarne, 200—Ottawa Station Hospital	Gen Army		28	2	..	..	91
Lakewood, 69,160—Cuyahoga Lakewood Hospital A	Gen City		120	103	28	874	4,253
Lakewood, 3,890—Warren Blair Brothers Hospital	Gen Part		8	7	3	135	289

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Lima, 41,711—Allen District Tuberculosis Hospital TB	Counties		130	103	..	..	137
Lima Memorial Hosp. *Ao	Gen NPAssn		146	129	21	807	4,790
Lima State Hospital	Ment State		1,176	1,133	..	..	165
St. Rita's Hospital *Ao	Gen Church		140	136	25	939	4,346
Lodi, 1,304—Medina Lodi Hospital	Gen NPAssn		40	28	10	323	1,123
Logan, 6,177—Hocking Cherrington Hospital	Gen NPAssn		35	13	5	98	447
Lorain, 44,125—Lorain St. Joseph's Hospital A	Gen Church		125	97	26	1,103	4,012
Macedonia, 734—Summit Hawthorn State Hosp.	Ment State		1,070	1,005	..	..	174
Mansfield, 37,151—Richland Mansfield General Hosp. *Ao	Gen NPAssn		153	114	37	1,003	4,677
Richland County Tuberculosis Sanatorium	TB County		28	24	..	..	40
Marletta, 11,543—Washington Marletta Memorial Hospital	Gen NPAssn		54	35	10	373	1,842
Marion, 50,817—Marion Marion City Hospital	Gen City		50	53	12	872	2,594
Sawyer Sanatorium A	N&M Indiv		50	24	..	..	77
Martins Ferry, 14,729—Belmont Martins Ferry Hospital Ao	Gen NPAssn		95	88	15	609	3,235
Masillon, 26,611—Stark Masillon City Hospital Ao	Gen NPAssn		150	111	34	1,013	5,751
Masillon State Hosp. *Ao	Ment State		3,420	3,338	..	..	768
McConnelsville, 1,895—Morgan Rocky Glen Sanatorium	TB Corp		135	111	..	..	116
Middletown, 31,224—Butler Middletown Hospital Ao	Gen NPAssn		159	113	40	1,146	4,803
Millerburg, 2,239—Holmes Holmes County Joel E. Pomerehne Memorial Hospital	Gen County		28	14	8	154	759
Mount Vernon, 10,123—Knox Avalon Sanatorium	TB NPAssn		100	50	..	..	85
Mercy Hospital	Gen Church		65	45	10	430	1,610
Ohio State Sanatorium A	TB State		185	132	..	..	247
Munroe Falls, 511—Summit Summit County Hospital	Gen County		150	115	..	..	273
Napoleon, 4,825—Henry S. M. Heller Memorial Hosp. Gen	City		18	12	7	18	50
National Military Home, —Montgomery Veterans Admin. Facility A	Gen Vet		1,053	803	..	..	5,107
Newark, 31,187—Licking Licking County Tuberculosis Sanatorium	TB County		57	35	..	..	77
Newark Hospital Ao	Gen NPAssn		106	88	24	833	4,016
New London, 1,656—Huron New London Hospital	Gen NPAssn		9	5	3	77	245
New Philadelphia, 12,328—Tuscarawas Tuscarawas Valley Sanat.	TB County		35	19	..	..	19
Norwalk, 8,211—Huron Norwalk Memorial Hospital	Gen NPAssn		28	20	7	395	940
Oberlin, 4,305—Lorain Allen Hospital, Oberlin College	Gen NPAssn		45	24	11	223	1,850
Oxford, 2,756—Butler Miami Univ. Student Hosp.	Inst State		50	9	..	..	943
Painesville, 12,255—Lake Lake County Memorial Hospital	Gen County		125	47	20	723	2,382
Perrysburg, 3,457—Wood Rheinfrank Hospital	Goiter Indiv		11	4	..	..	161
Piqua, 16,449—Miami Memorial Hospital A	Gen NPAssn		77	69	12	606	3,292
Port Clinton, 4,565—Ottawa H. B. Magruder Memorial Hospital	Gen NPAssn		44	32	17	336	1,393
Portsmouth, 40,466—Scioto Mercy Hospital	Gen Church		61	53	14	437	2,578
Portsmouth General Hosp. o	Gen City		85	60	15	499	2,412
Ravenna, 8,338—Portage Robinson Memorial Portage County Hospital	Gen County		115	52	30	780	2,451
St. Clairsville, 2,911—Belmont Belmont Sanatorium	TB County		56	46	..	..	50
Salem, 12,301—Columbiana Central Clinic and Hospital	Gen NPAssn		32	..	No data supplied	..	..
Salem City Hospital o	Gen NPAssn		60	41	10	474	2,114
Sandusky, 24,874—Erie Good Samaritan Hospital A	Gen NPAssn		50	34	12	317	1,411
Providence Hospital A	Gen Church		115	85	25	463	1,872
Shelby, 6,643—Richland Shelby Memorial Hospital	Gen NPAssn		54	23	16	309	1,169
Sidney, 9,790—Shelby Wilson Memorial Hospital A	Gen NPAssn		38	36	12	371	1,587
South Euclid, 6,146—Cuyahoga Rainbow Hospital for Crippled and Convalescent Children A	Unit of University Hospitals, Cleveland						
Springfield, 70,662—Clark Clark County Tuberculosis Sanatorium	TB County		125	91	..	..	187
Springfield City Hospital *Ao	Gen City		258	166	51	1,707	6,917
..	Gen Church		65	55	20	582	2,377
..	Gen NPAssn		164	145	31	909	5,854
..	Gen Church		47	38	12	464	1,623
..	Gen NPAssn		36	20	5	68	728
East Side Hospital	Gen Church		133	133	32	844	5,078
Flower Hospital Ao	Gen						

Key to symbols and abbreviations is on page 855

OHIO—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassineets	Number of Births	Admissions †
Reynoldsburg, 652—Franklin		TbChil NPAssn	30	27	..	...	55
Nightingale Cottage							
State Soldiers' Home, 900—Frie							
Ohio Soldiers and Sailors Home							
Hospital	Inst	State	180	65	..	...	414
Tiffin, 16,102—Seneca							
Kentucky Memorial Hospital.	Inst	NPAssn	50	7	..	...	356
Toledo, 282,349—Lucas							
Lucas County Hospital Annex Chr	Chr	County	112	110	..	...	83
Toledo Society for Crippled Chil-							
dren Convalescent Home..	Orth	NPAssn	74	40	..	...	108
Warren, 42,837—Trumbull							
Elm Manor	Alcoh	Indiv	8	2	..	...	36
... P.O.), 1,175—Cuyahoga							
HosP... Inst	City		170	162	..	...	192
Wickhaven Sanitarium	N&M	Corp	50	44	..	...	171
Wooster, 11,543—Wayne	N&M	Corp	15	9	..	...	49
Hygieia Hall	Inst	NPAssn	25	5	..	...	361
Ohio Soldiers' and Sailors' Or-							
phans' Home Hospital.....	Inst	State	84	15	..	...	838
Yellow Springs, 1,640—Greene							
Antioch College Infirmary....	Inst	NPAssn	13	5	..	...	652
Youngstown, 167,720—Mahoning							
Youngstown Municipal Hosp..	Iso	City	50	3	..	...	40
OKLAHOMA							
Hospitals and Sanatoriums							
Ada, 15,143—Pontotoc							
Breco Memorial Hospital.....	Gen	NPAssn	25	7	2	45	450
Valley View Hospital▲.....	Gen	NPAssn	50	26	10	365	1,728
Altus, 5,593—Jackson							
Altus Hospital	Gen	Indiv	19	9	6	165	615
Alva, 5,655—Woods							
Alva General Hospital.....	Gen	City	40	19	10	255	1,272
Anadarko, 5,579—Caddo							
Anadarko Hospital	Gen	Part	22	7	4	121	419
Ardmore, 16,886—Carter							
Hardy Sanitarium▲	Gen	Indiv	57	23	11	255	1,230
Bartlesville, 16,267—Washington							
Washington County Memorial							
Hospital	Gen	County	73	34	16	416	1,533
Beaver, 1,166—Beaver							
Beaver Hospital	Gen	Part	20	0	5	148	573
Blackwell, 8,537—Kay							
Blackwell General Hospital... Gen	Gen	NPAssn	37	29	8	222	1,030
Bristow, 6,050—Creek							
Cowart-Sisler Hospital	Gen	Part	14	8	5	120	655
Carnegie, 1,740—Caddo							
Carnegie Hospital and Clinic Gen	Gen	Corp	14	8	5	217	629
Cherokee, 2,553—Alfalfa							
Masonic Hospital	Gen	NPAssn	48	15	10	119	814
Chickasha, 14,111—Grady							
Chickasha Hospital	Gen	Part	54	28	7	153	1,327
Cottage Hospital	Gen	Indiv	10	9	3	42	382
General Hospital	Gen	NPAssn	20	9	8	205	...
Claremore, 4,134—Rogers							
Claremore General Hospital.. Gen	Gen	Indiv	15	11	5	156	810
Claremore Indian Hospital▲.. Gen	Gen	IA	80	61	18	165	1,359
Clinton, 6,736—Custer							
Clinton Indian Hospital..... Gen	Gen	IA	34	15	5	44	560
U. S. Naval Air Station Dis-							
pensary	Gen	Navy	100	...	..	Estab.	1913
Western Oklahoma State Hos-							
pitalo	Gen	State	132	81	12	296	1,977
Western Oklahoma Tuberculo-							
sis Sanatorium	TB	State	236	279	..	...	341
Concho, 290—Canadian							
Cheyenne and Arapaho Hosp.▲ Gen	Gen	IA	46	23	8	80	560
Cordell, 2,776—Washita							
Florence Hospital	Gen	Indiv	50	3	5	86	24

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Frederick, 5,102—Tillman	Gen	Indiv	20	3	5	138	501
Frederick Clinic Hospital.....	Gen	Corp	17	5	5	135	400
Spurgeon, Arrington and Allen Hospital and Clinic.....	Gen	Indiv	12	5	2	62	206
Grandfield, 1,116—Tillman	Gen	Indiv	14	7	5	102	684
Grandfield Hospital.....	Gen	Indiv	14	7	5	102	684
Granite, 1,038—Greer	Gen	Indiv	14	7	5	102	684
Lewis Hospital.....	Gen	Indiv	14	7	5	102	684
Guthrie, 10,018—Logan	Gen	Indiv	14	7	5	102	684
Cimarron Valley Wesley Hos. pital.....	Gen	NPAasn	35	18	5	221	842
Henryetta, 6,905—Okmulgee	Gen	Indiv	25	20	6	160	927
Henryetta Hospital.....	Gen	Indiv	18	10	2	202	898
John Taylor Hospital.....	Gen	Indiv	18	10	2	202	898
Hobart, 5,177—Klawa	Gen	Part	22	9	5	281	987
General Hospital.....	Gen	Part	22	9	5	281	987
Holdenville, 6,632—Hughes	Gen	Part	16	14	8	261	911
Pryor-Johnston-Kernick Clinic and Hospital.....	Gen	Part	16	14	8	261	911
Holts, 2,772—Harmon	Gen	Indiv	16	2	7	128	662
Holts Hospital.....	Gen	Indiv	16	2	7	128	662
Hominy, 5,357—Osage	Gen	Indiv	28	2	4	91	313
Hominy Hospital.....	Gen	Indiv	28	2	4	91	313
Huko, 5,509—Choctaw	Gen	Indiv	12	4	8	125	255
Johnson Hospital.....	Gen	Indiv	12	4	8	125	255
Lawton, 18,035—Comanche	Gen	Part	16	10	11	417	858
Angus Hospital.....	Gen	Part	166	91	16	224	2,360
Klawa Indian Hospital.....	Gen	Part	41	32	14	177	1,684
Southwestern Clinic Hospital.....	Gen	Part	41	32	14	177	1,684
Maud, 2,606—Seminole	Gen	Indiv	18	5	3	51	115
Maud Hospital.....	Gen	Indiv	18	5	3	51	115
McAlester, 12,401—Pittsburg	Gen	NPAasn	10	20	7	232	1,744
Albert Pike Hospital.....	Gen	NPAasn	10	20	7	232	1,744
Central Oklahoma State Hospital Annex.....	Gen	State	250	217	..	..	30
St. Mary's Hospital.....	Gen	Church	51	37	12	242	2,881
Miami, 5,345—Ottawa	Gen	Church	45	27	12	271	1,136
Miami Baptist Hospital.....	Gen	Church	45	27	12	271	1,136
Muskogee, 3,332—Muskogee	Gen	City	51	49	9	465	2,306
Muskogee General Hospital.....	Gen	City	125	69	25	685	2,798
Oklahoma Baptist Hosp. & O. Veterans Admin. Facility.....	Gen	Church	417	231	..	..	2,279
man, 11,129—Cleveland	Gen	Vet	417	231	..	..	2,279
Central Oklahoma State Hospital.....	Gen	State	2,625	2,609	..	..	945
Ellison Infirmary.....	Gen	State	60	13	..	..	1,350
U. S. Naval Air Station Dispensary.....	Gen	Navy	30	16	..	..	1,580
U. S. Naval Hospital.....	Gen	Navy	578	758	14	263	6,509
Okeene, 1,079—Blaine	Gen	Indiv	10	5	5	45	270
Okeene Clinic Hospital.....	Gen	Indiv	10	5	5	45	270
Okemah, 3,811—Okfuskee	Gen	Indiv	10	5	4	150	367
Clinic Hospital.....	Gen	Indiv	10	5	4	150	367
Oklahoma City, 201,424—Oklahoma	Gen	Corp	41	35	..	..	952
Bone and Joint Hospital-McBride Clinic.....	Gen	Corp	50	41	6	400	1,570
Capitol Hill General Hospital.....	Gen	Corp	71	38	..	..	737
Coyne Campbell Sanitarium.....	Gen	Corp	37	16	2	35	220
Great Western Hospital.....	Gen	Corp	22	17	..	..	77
Moorman's Farm Sanatorium TB	Gen	Indiv	22	17	..	..	77
Oklahoma City General Hospital.....	Gen	Corp	100	92	12	420	4,353
Polyclinic Hospital.....	Gen	Indiv	95	62	16	480	2,492
St. Anthony Hospital.....	Gen	Church	375	314	75	2,183	10,601
University Hospitals.....	Gen	State	410	312	18	571	6,814
Wesley Hospital.....	Gen	Part	150	127	31	1,134	6,093
Wille Neuro-Psychiatric Hosp. & N&M	Gen	Indiv	25	18	..	..	170
Okmulgee, 16,051—Okmulgee	Gen	Part	12	9	2	33	381
Miner-Vernon Hospital.....	Gen	City	45	19	8	214	996
Okmulgee City Hospital.....	Gen	City	45	19	8	214	996
Pauls Valley, 5,101—Garvin	Gen	Part	16	9	6	271	303
Lindsey-Johnson-Shirley Hosp. Gen	Gen	Part	16	9	6	271	303
Pawhuska, 5,113—Osage	Gen	County	46	12	8	67	398
Osage County Infirmary.....	Gen	County	46	12	8	67	398
Pawhuska Municipal Hospital.....	Gen	City	40	12	6	110	595
Pawnee, 2,742—Pawnee	Gen	IA	50	17	6	69	487
Pawnee-Ponca Hospital.....	Gen	IA	50	17	6	69	487
Picher, 5,818—Ottawa	Gen	Indiv	40	4	3	21	218
American Hospital.....	Gen	Part	17	10	3	101	581
Picher Hospital.....	Gen	Part	17	10	3	101	581
Ponca City, 16,794—Kay	Gen	Church	75	53	12	570	2,059
Ponca City Hospital.....	Gen	Church	75	53	12	570	2,059
Prague, 1,422—Lincoln	Gen	Indiv	10	4	3	105	377
Robbins Hospital.....	Gen	Indiv	10	4	3	105	377
Pryor, 2,501—Mayes	Gen	Part	20	12	8	204	618
Whitaker Hospital.....	Gen	Part	20	12	8	204	618
Sapulpa, 12,219—Creek	Gen	City	20	18	5	107	598
Sapulpa City Hospital.....	Gen	City	20	18	5	107	598
Sayre, 3,037—Beckham	Gen	Indiv	20	6	7	163	511
Sayre Hospital.....	Gen	Indiv	20	6	7	163	511
Seminole, 11,547—Seminole	Gen	Corp	27	20	7	245	1,001
Harber Hospital.....	Gen	Corp	27	20	7	245	1,001
Shattuck, 1,275—Ellis	Gen	Indiv	48	25	6	338	1,623
Shattuck Hospital.....	Gen	Indiv	48	25	6	338	1,623
Shawnee, A. C. J. ..	Gen	Part	25	15	5	156	759
Shawnee ..	Gen	Part	25	15	5	156	759
Shawnee ..	Gen	Part	25	15	5	156	759
Stillwater, Agricultural and Mechanical College Infirmary.....	Gen	State	72	23	..	..	2,015
Stillwater Municipal Hosp. & N&M	Gen	City	45	25	15	345	1,186

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Sulphur, 7,070—Murray	Gen	State	136	104	..	..	780
Oklahoma State Veterans Hospital.....	Gen	State	136	104	..	..	780
Supply, 414—Woodward	Gen	State	1,600	1,516	..	..	453
Western Oklahoma Hospital.....	Gen	State	1,600	1,516	..	..	453
Taft, 772—Muskogee	Gen	State	750	733	..	..	201
State Hospital for Negro Insane.....	Gen	State	750	733	..	..	201
Tablequah, 3,027—Cherokee	Gen	IA	72	48	13	218	690
Wm. W. Hastings Indian Hospital.....	Gen	IA	72	48	13	218	690
Tallhanna, 1,037—LeFlore	Gen	IA	370	109	..	..	302
Eastern Oklahoma State Tuberculosis Sanatorium.....	Gen	State	240	130	20	175	1,141
Tallhanna Indian Hospital.....	Gen	State	240	130	20	175	1,141
Tonkawa, 3,197—Kay	Gen	Indiv	21	5	4	41	280
Tonkawa Hospital.....	Gen	Indiv	21	5	4	41	280
Tulsa, 142,157—Tulsa	Gen	NPAasn	30	18	15	451	993
Flower Hospital.....	Gen	NPAasn	358	144	33	1,097	7,992
Hillcrest Memorial Hosp. & N&M	Gen	NPAasn	358	144	33	1,097	7,992
Merry Hospital for Crippled Children.....	Gen	Indiv	50	23	..	..	1,011
Moton Memorial Hospital.....	Gen	NPAasn	42	18	5	13	153
Oakwood Sanitarium.....	Gen	Corp	40	17	..	..	210
St. John's Hospital.....	Gen	Church	273	205	60	1,606	10,327
Vinita, 5,635—Craig	Gen	State	2,685	2,616	..	..	495
Eastern Oklahoma Hospital.....	Gen	State	2,685	2,616	..	..	495
Vinita Hospital.....	Gen	Corp	14	9	5	235	734
Waurika, 2,458—Jefferson	Gen	Corp	25	10	4	33	283
Waurika Hospital.....	Gen	Corp	25	10	4	33	283
Wewoka, 10,315—Seminole	Gen	Part	25	10	5	47	320
Wewoka Hospital.....	Gen	Part	25	10	5	47	320
Woodward, 5,406—Woodward	Gen	Corp	25	14	4	220	1,276
Memorial Hospital.....	Gen	Corp	25	14	4	220	1,276

Related Institutions

Enid, 28,081—Garfield	Gen	State	1,300	1,220	..	..	127
Northern Oklahoma Hospital.....	Gen	State	1,300	1,220	..	..	127
Fort Reno (El Reno P.O.), 150—Canadian	Gen	Army	14	1	..	..	85
Station Hospital.....	Gen	Army	14	1	..	..	85
McAlester, 12,401—Pittsburg	Gen	State	40	20	..	..	850
Oklahoma State Prison Hosp. Inst	Gen	State	40	20	..	..	850
Oklahoma City, 201,421—Oklahoma	Gen	Part	29	18	..	..	86
Campbell Tuberculosis Sanat. TB	Gen	Part	22	9	25	131	148
Home of Redeeming Love.....	Gen	Church	22	9	25	131	148
Tablequah, 3,027—Cherokee	Gen	Church	22	9	25	131	148
Sequoyah Orphan Training School Hospital.....	Gen	Inst	19	12	..	..	417
Tulsa, 142,157—Tulsa	Gen	Inst	19	12	..	..	417
Tulsa Junior League Home for Convalescent Crippled Children.....	Gen	Inst	19	12	..	..	417
Watonga, 2,525—Blaine	Gen	Indiv	13	7	3	126	353
Watonga Hospital.....	Gen	Indiv	13	7	3	126	353
Wynnewood, 2,318—Garvin	Gen	Part	10	4	5	97	288
Wynnewood Hospital Clinic.....	Gen	Part	10	4	5	97	288

OREGON

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 5,634—Linn	Gen	NPAasn	52	30	16	271	1,177
Albany General Hospital.....	Gen	NPAasn	52	30	16	271	1,177
As.....	Gen	NPAasn	28	14	10	141	719
As.....	Gen	NPAasn	28	14	10	141	719
Columbia Hospital.....	Gen	Church	91	49	12	241	2,128
St. Mary's Hospital.....	Gen	Church	120	33	15	255	1,769
Baker, 9,342—Baker	Gen	Church	75	45	15	215	1,634
St. Elizabeth Hospital.....	Gen	Church	75	45	15	215	1,634
Bend, 10,021—Deschutes	Gen	Church	70	33	15	349	1,498
St. Charles Hospital.....	Gen	Church	70	33	15	349	1,498
Burns, 2,566—Harney	Gen	Indiv	18	10	4	85	463
Valley View Hospital.....	Gen	Indiv	18	10	4	85	463
Chemawa, 700—Marion	Gen	IA	49	15	3	8	686
Chemawa Indian Hospital.....	Gen	IA	49	15	3	8	686
Corvallis, 5,392—Benton	Gen	Indiv	18	10	8	86	545
Ball Clinic.....	Gen	Indiv	18	10	8	86	545
Corvallis General Hospital.....	Gen	NPAasn	38	23	10	351	1,011
Student Health Service, Oregon State College.....	Gen	Inst	30	12	..	..	768
Dallas, 3,579—Polk	Gen	Corp	33	21	6	120	1,057
Dallas Hospital.....	Gen	Corp	33	21	6	120	1,057
Enterprise, 1,709—Wallowa	Gen	Corp	19	6	5	84	322
Enterprise Hospital.....	Gen	Corp	19	6	5	84	322
Eugene, 20,835—Lane	Gen	Part	53	42	2	7	1,883
Eugene Hospital and Clinic.....	Gen	Part	53	42	2	7	1,883
Sacred Heart General Hosp. & N&M	Gen	Church	156	96	35	1,225	4,219
Grants Pass, 6,028—Josephine	Gen	County	54	33	12	209	1,265
Josephine General Hospital.....	Gen	County	54	33	12	209	1,265
Hood River, 3,280—Hood River	Gen	NPAasn	38	22	9	107	1,548
Hood River Hospital.....	Gen	NPAasn	38	22	9	107	1,548
Klamath Agency, 150—Klamath	Gen	IA	26	9	6	42	200
Klamath Indian Hospital.....	Gen	IA	26	9	6	42	200
Klamath Falls, 16,497—Klamath	Gen	Corp	45	48	12	315	1,750
Hillside Hospital.....	Gen	Corp	85	35	14	80	1,700
Klamath Valley Hospital.....	Gen	Corp	85	35	14	80	1,700
La Grande, 7,747—Union	Gen	Church	50	30	12	167	1,279
St. Joseph Hospital.....	Gen	Church	50	30	12	167	1,279

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassineets	Number of Births	Admissions †
Lakeview, 2,466—Lakeview Hospital	Gen	Corp	16	9	4	97	900
Lebanon, 2,729—Linn	Gen	Part	29	22	6	384	1,487
Marshall, 5,250—Coos	Gen	Church	50	30	10	213	1,816
McAuley Hospital	Gen	Church	50	30	10	213	1,816
McMinnville, 3,706—Yamhill	Gen	Corp	33	13	6	121	656
General Hospital	Gen	Corp	33	44	13	396	2,036
Medford, 11,281—Jackson	Gen	NPAssn	52	37	10	351	1,975
Community Hospital	Gen	Church	75	38	10	278	2,049
Sacred Heart Hospital	Gen	Church	75	38	10	278	2,049
Milwaukie, 1,871—Clackamas	TB	NPAssn	53	37	..	..	148
Portland Open Air Sanat.	TB	NPAssn	53	37	..	..	148
Myrtle Point, 1,296—Coos	Gen	Indiv	40	20	9	120	692
Mast Hospital	Gen	Indiv	40	20	9	120	692
Newberg, 2,960—Yamhill	Gen	Corp	22	12	4	162	618
Willamette Hospital	Gen	Corp	22	12	4	162	618
North Bend, 4,262—Coos	Gen	Part	60	41	7	210	1,380
Keizer Brothers Hospital	Gen	Part	60	41	7	210	1,380
Ontario, 3,551—Malheur	Gen	Church	50	28	12	203	1,174
Holy Rosary Hospital	Gen	Church	50	28	12	203	1,174
Oregon City, 6,124—Clackamas	Gen	Part	31	19	7	185	599
Hutchinson General Hospital	Gen	Part	31	19	7	185	599
Oregon City Hospital	Gen	Corp	61	44	10	290	1,658
Pendleton, 8,847—Umatilla	Gen	State	1,350	1,212	..	..	247
Eastern Oregon State Hospital	Gen	State	1,350	1,212	..	..	247
St. Anthony's Hospital	Gen	Church	105	69	27	316	2,189
Portland, 305,394—Multnomah	Gen	Corp	115	92	..	..	4,334
Coffey Memorial Hospital	Gen	Corp	115	92	..	..	4,334
Doernbecher Memorial Hospital for Children	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	330	332	95	3,563	12,034
Emanuel Hospital	Gen	Church	432	339	78	2,011	13,970
Good Samaritan Hospital	Gen	Church	432	339	78	2,011	13,970
Hahnemann Hospital	Gen	NPAssn	65	44	14	369	1,667
Juvenile Hospital for Girls	Gen	NPAssn	100	44	6	7	127
Morningside Hospital	Gen	Mat Fed	350	311	..	..	56
Multnomah Hospital	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	330	332	95	3,563	12,034
Portland Convalescent Hosp.	Med	Indiv	25	13	..	..	151
Portland Medical Hospital	Gen	Corp	57	22	..	..	432
Portland Sanitarium and Hospital	Gen	Church	130	146	31	2,044	6,376
Providence Hospital	Gen	Church	190	135	..	..	6,183
St. Vincent's Hospital	Gen	Church	250	323	72	1,591	10,736
Salvation Army White Shield Home	Mat	Church	34	24	7	78	84
Shriners Hospital for Crippled Children	Orth	NPAssn	60	50	..	..	241
Theo. B. Wilcox Memorial Hospital	Unit of Good Samaritan Hospital	Gen	330	332	95	3,563	12,034
University of Oregon Medical School Hospitals and Clinics	GenTb CoState	430	361	35	255	6,271	
University State Tuberculosis Hospital	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	330	332	95	3,563	12,034
Vancouver City Hospital	Gen	NPAssn	130	146	31	2,044	6,376
Veterans Admin. Facility	Gen	Vet	407	331	..	..	2,638
Prairie City, 647—Grant	Gen	NPAssn	15	14	6	72	379
Blue Mt. General Hospital	Gen	NPAssn	15	14	6	72	379
Prineville, 2,358—Crook	Gen	Indiv	25	11	6	145	607
Prineville General Hospital	Gen	Indiv	25	11	6	145	607
Roseburg, 4,924—Douglas	Gen	Church	44	25	7	261	1,336
Mersey Hospital	Gen	Church	44	25	7	261	1,336
Veterans Admin. Facility	Gen	Vet	506	569	..	..	355
St. Helens, 4,304—Columbia	Gen	Corp	20	10	6	128	836
St. Helens General Hospital	Gen	Corp	20	10	6	128	836
Salem, 30,908—Marion	Gen	State	2,860	2,691	..	..	90
Oregon State Hospital	Gen	State	2,860	2,691	..	..	90
Oregon State Tuberculosis Hospital	TB	State	320	171	..	..	143
..	Gen	Church	160	86	18	610	3,409
..	Gen	NPAssn	78	64	18	614	2,825
..	Gen	NPAssn	20	14	9	242	719
Eastern Oregon State Tuberculosis Hospital	TB	State	175	134	..	..	141
Mid-Columbia Hospital	Gen	Indiv	22	16	6	43	644
The Dalles Hospital	Gen	Corp	75	41	11	295	1,775
Tillamook, 2,751—Tillamook	Gen	County	35	22	8	113	1,266
Tillamook General Hospital	Gen	County	35	22	8	113	1,266
Toledo, 2,288—Lincoln	Gen	Part	25	15	5	118	571
Lincoln Hospital	Gen	Part	25	15	5	118	571
Troutdale, 211—Multnomah	Gen	County	41	27	..	..	87
Multnomah County Tuberculosis Pavilion	TB	County	41	27	..	..	87
Warm Springs, 150—Jefferson	Gen	IA	23	10	6	12	213
Warm Springs Hospital	Gen	IA	23	10	6	12	213
Related Institutions							
Portland, 305,394—Multnomah	Gen	City	85	12	..	..	571
City Isolation Hospital	Gen	City	85	12	..	..	571
Salvation Army Wemme Home	Mat	Church	22	12	15	33	52
Salem, 30,908—Marion	Gen	State	1,114	1,030	..	..	127
Oregon Fairview Home	MeDe	State	1,114	1,030	..	..	127
Oregon State Penitentiary Hospital	Inst	State	80	12	..	..	236
Oregon State School for the Deaf	Inst	State	15	2	..	..	373
Waldport, 636—Lincoln	Gen	Indiv	10	2	4	27	43
Waldport Community Hosp.	Gen	Indiv	10	2	4	27	43

PENNSYLVANIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassineets	Number of Births	Admissions †
Ablington, 3,200—Montgomery	Gen	NPAssn	280	206	61	1,180	7,344
Ablington Memorial Hosp.	Gen	NPAssn	280	206	61	1,180	7,344
Allentown, 96,004—Lehigh	Gen	NPAssn	342	309	33	1,199	9,699
Allentown Hospital	Gen	NPAssn	342	309	33	1,199	9,699
Allentown State Hospital	Gen	State	1,906	1,934	..	..	470
Baer Hospital	Gen	Indiv	15	8	5	91	238
Sacred Heart Hospital	GenTb	Church	291	201	44	1,418	5,893
Allenwood, 400—Union	TB	NPAssn	104	96	..	..	240
Devitt's Camp	TB	NPAssn	104	96	..	..	240
Altoona, 80,214—Blair	Gen	NPAssn	177	125	28	923	4,250
Altoona Hospital	Gen	NPAssn	177	125	28	923	4,250
Mercy Hospital	Gen	NPAssn	147	121	33	846	4,012
Ambler, 3,953—Montgomery	N&M	NPAssn	65	55	..	..	130
Dufur Hospital	N&M	NPAssn	65	55	..	..	130
Ashland, 7,045—Schuylkill	Gen	State	173	120	20	515	2,892
Ashland State Hospital	Gen	State	173	120	20	515	2,892
Beaver Falls, 17,008—Beaver	Gen	NPAssn	66	63	13	565	2,454
Providence Hospital	Gen	NPAssn	66	63	13	565	2,454
Bedford, 3,208—Bedford	Gen	Indiv	17	8	4	60	392
Timmins Hospital	Gen	Indiv	17	8	4	60	392
Bellefonte, 5,304—Centre	Gen	NPAssn	55	47	15	499	1,644
Centre County Hospital	Gen	NPAssn	55	47	15	499	1,644
Bellevue, 10,488—Allegheny	Gen	NPAssn	100	87	25	555	3,258
Suburban General Hospital	Gen	NPAssn	100	87	25	555	3,258
Berwick, 13,181—Columbia	Gen	NPAssn	63	31	12	453	1,265
Berwick Hospital	Gen	NPAssn	63	31	12	453	1,265
Bethlehem, 68,490—Northampton	Gen	NPAssn	256	190	37	1,347	6,766
St. Luke's Hospital	Gen	NPAssn	256	190	37	1,347	6,766
Bloomsburg, 9,799—Columbia	Gen	NPAssn	118	71	17	518	2,117
Bloomsburg Hospital	Gen	NPAssn	118	71	17	518	2,117
Blossburg, 1,955—Tioga	Gen	State	90	70	9	149	1,510
Blossburg State Hospital	Gen	State	90	70	9	149	1,510
Bradock, 18,326—Allegheny	Gen	NPAssn	133	125	42	1,324	4,225
Bradock General Hosp.	Gen	NPAssn	133	125	42	1,324	4,225
Bradford, 17,691—McKean	Gen	NPAssn	115	87	24	596	3,348
Bradford Hospital	Gen	NPAssn	115	87	24	596	3,348
Brookville, 4,397—Jefferson	Gen	NPAssn	39	32	10	192	971
Brookville Hospital	Gen	NPAssn	39	32	10	192	971
Brownsville, 8,015—Fayette	Gen	NPAssn	89	63	10	447	2,072
Brownsville General Hosp.	Gen	NPAssn	89	63	10	447	2,072
Bryn Mawr, 10,206—Montgomery	Gen	NPAssn	267	195	48	1,137	5,938
Bryn Mawr Hospital	Gen	NPAssn	267	195	48	1,137	5,938
Butler, 24,477—Butler	Gen	NPAssn	168	138	36	935	4,600
Butler County Memorial Hospital	Gen	NPAssn	168	138	36	935	4,600
Canonsburg, 12,599—Washington	Gen	NPAssn	84	60	32	718	2,205
Canonsburg General Hosp.	Gen	NPAssn	84	60	32	718	2,205
Carbondale, 19,371—Lackawanna	Gen	NPAssn	69	50	18	277	1,473
Carbondale General Hospital	Gen	NPAssn	69	50	18	277	1,473
St. Joseph's Hospital	Gen	Church	88	65	10	259	1,933
Carlisle, 13,984—Cumberland	Gen	NPAssn	77	76	18	479	2,565
Carlisle Hospital	Gen	NPAssn	77	76	18	479	2,565
Station Hospital	Gen	Army	60	53	2	26	792
Chambersburg, 14,852—Franklin	Gen	NPAssn	92	59	18	492	2,499
Chambersburg Hospital	Gen	NPAssn	92	59	18	492	2,499
Charleroi, 10,784—Washington	Gen	NPAssn	128	101	32	923	3,878
Charleroi Monessen Hospital	Gen	NPAssn	128	101	32	923	3,878
Chester, 59,285—Delaware	Gen	NPAssn	215	186	35	1,387	7,066
Chester Hospital	Gen	NPAssn	215	186	35	1,387	7,066
J. Lewis Crozer Home for Incurables and Homeopathic Hospital	Gen	NPAssn	85	70	20	781	3,920
Clearfield, 9,372—Clearfield	Gen	State	900	943	..	..	225
Clearfield Hospital	Gen	State	900	943	..	..	225
Coudale, 6,163—Schuylkill	Gen	State	100	64	18	425	2,287
Coudale State Hospital	Gen	State	100	64	18	425	2,287
Coatesville, 14,006—Chester	Gen	NPAssn	120	125	18	420	2,695
Clement Atkinson Memorial Hospital	Gen	Indiv	20	9	3	52	154
Coatesville Hospital	Gen	NPAssn	95	78	24	518	2,686
Veterans Admin. Facility	Gen	Vet	1,621	1,513	..	..	295
Columbia, 11,547—Lancaster	Gen	NPAssn	45	35	10	325	831
Columbia Hospital	Gen	NPAssn	45	35	10	325	831
Confluence, 1,035—Somerset	Gen	Indiv	13	4	4	26	183
Priece Hospital	Gen	Indiv	13	4	4	26	183
Connellsville, 13,608—Fayette	Gen	State	97	61	15	503	2,103
Connellsville State Hospital	Gen	State	97	61	15	503	2,103
Corry, 6,935—Erie	Gen	NPAssn	40	37	8	374	2,077
Corry Hospital	Gen	NPAssn	40	37	8	374	2,077
Coudersport, 3,197—Potter	Gen	NPAssn	25	24	5	164	849
Coudersport General Hospital	Gen	NPAssn	25	24	5	164	849
Cresson, 2,500—Cambria	TB	State	840	785	..	..	780
Pennsylvania State Tuberculosis Sanatorium No. 2	TB	State	840	785	..	..	780
Danville, 7,122—Montour	Gen	State	2,536	2,403	..	..	451
Danville State Hospital	Gen	State	2,536	2,403	..	..	451
Geo. F. Geisinger Memorial Hospital	Gen	NPAssn	134	135	20	693	5,991
Darby, 10,334—Delaware	Gen	Church	191	130	69	1,715	5,550
Fitzgerald-Mercy Hospital	Gen	Church	191	130	69	1,715	5,550
Dixmont, 163—Allegheny	N&M	NPAssn	1,200	1,050	..	..	81
Dixmont Hospital	N&M	NPAssn	1,200	1,050	..	..	81
Doylestown, 4,976—Bucks	Gen	Indiv	20	16	..	..	30
Dr. Buckman's Sanitarium	N&M	Indiv	20	16	..	..	30
Drexel Hill, Delaware	Gen	NPAssn	74	55	16	416	2,374
Delaware County Hospital	Gen	NPAssn	74	55	16	416	2,374
Du Bois, 12,089—Clearfield	Gen	Church	51	34	11	399	1,534
Du Bois Hospital	Gen	Church	51	34	11	399	1,534
Maple Avenue Hospital	Gen	NPAssn	89	42	10	252	1,537

PENNSYLVANIA—Continued

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Englewood, 500—Montgomery	Gen	NPAasn	188	167	..	...	218
Englewood Sanatorium for Consumptives*†	TB	NPAasn	45	57	26	591	1,861
Easton, 31,589—Northampton	Gen	NPAasn	199	128	21	667	4,758
Betts Hospital	Gen	NPAasn	20	15	..	...	30
Easton Hospital*†	Gen	NPAasn	67	42	12	278	1,568
Easton Sanitarium	N&M	Indiv	167	146	..	...	599
East Stroudsburg, 6,401—Monroe	Gen	NPAasn	225	116	..	...	122
General Hospital of Monroe County*	Gen	NPAasn	52	38	18	500	1,479
Elizabethtown, 4,315—Lancaster	Gen	NPAasn	1,009	1,040	..	...	111
Philadelphia Freemasons' Memorial Hospital Masonic Homes Inst	State	NPAasn	65	61	..	...	125
State Hospital for Crippled Children*	Orth	State	221	196	31	1,221	6,496
Ellwood City, 12,729—Lawrence	Gen	NPAasn	261	267	73	2,313	11,658
Ellwood City Hospital	Gen	NPAasn	18	35	..	...	53
Elwyn, 200—Delaware	Gen	NPAasn	40	25	8	89	767
Elwyn Tubercular School	McDe	NPAasn	53	59	14	370	1,910
Erle, 16,455—Erle	Gen	NPAasn	75	41	10	358	1,129
Erle County Tuberculosis Hospital	TB	County	85	80	..	...	115
Hamot Hospital*†	Gen	NPAasn	197	176	40	1,250	5,257
St. Vincent's Hospital*†	Gen	NPAasn	62	31	14	283	1,601
Zem Zem Hospital for Crippled Children	Orth	NPAasn	26	17	6	202	632
Everett, 24,425—Bedford	Gen	Indiv	20	25	8	89	767
Everett Hospital	Gen	Indiv	40	25	8	89	767
Franklin, 9,948—Venango	Gen	NPAasn	53	59	14	370	1,910
Franklin Hospital	Gen	NPAasn	75	41	10	358	1,129
Gettysburg, 5,906—Adams	Gen	NPAasn	85	80	..	...	115
Annie M. Warner Hospital	Gen	NPAasn	197	176	40	1,250	5,257
Gladwyne, 1,206—Montgomery	N&M	Indiv	62	31	14	283	1,601
Gladwyne Colony	N&M	Indiv	26	17	6	202	632
Greensburg, 16,741—Westmoreland	Gen	NPAasn	20	25	8	89	767
Westmoreland Hospital*†	Gen	NPAasn	53	59	14	370	1,910
Greenville, 8,149—Mercer	Gen	NPAasn	75	41	10	358	1,129
Greenville Hospital	Gen	NPAasn	85	80	..	...	115
Grove City, 6,250—Mercer	Gen	NPAasn	197	176	40	1,250	5,257
Grove City Hospital	Gen	NPAasn	62	31	14	283	1,601
Hamburg, 5,717—Perks	Gen	NPAasn	26	17	6	202	632
Pennsylvania State Sanatorium for Tuberculosis*	TB	State	20	25	8	89	767
Hanover, 13,076—York	Gen	NPAasn	80	55	18	731	2,125
Hanover General Hospital	Gen	NPAasn	312	231	56	1,191	7,239
Harrisburg, 8,589—Dauphin	Gen	NPAasn	170	125	35	1,293	6,181
Harrisburg Hospital*†	Gen	NPAasn	2,414	2,466	..	...	551
Harrisburg Polyclinic Hospital	Gen	NPAasn	52	28	8	121	725
Harrisburg State Hospital*†	Ment	State	25	13	21	618	610
Keystone Hospital	Gen	Indiv	189	155	30	375	5,256
Hazleton, 8,669—Luzerne	Gen	NPAasn	375	360	..	...	105
Corrigan Hospital	Mat	Corp	145	93	20	713	2,383
Hazleton State Hospital*†	Gen	State	31	19	8	131	783
Holidayburg, 5,000—Blair	Gen	NPAasn	70	61	14	315	2,636
Holidayburg State Hospital	Ment	State	170	120	20	527	4,622
Homestead, 19,641—Allegheny	Gen	NPAasn	32	23	10	190	1,002
Homestead Hospital*†	Gen	NPAasn	331	234	33	1,033	7,571
Honedale, 5,657—Wayne	Gen	NPAasn	62	61	21	186	1,751
Wayne County Memorial Hospital	Gen	NPAasn	21	15	16	356	473
Huntingdon, 7,170—Huntingdon	Gen	NPAasn	107	83	23	714	2,816
J. C. Blair Memorial Hosp.	Gen	NPAasn	59	21	12	117	873
Indiana, 10,150—Indiana	Gen	NPAasn	23	18	6	153	688
Indiana Hospital	Gen	NPAasn	130	89	30	857	3,413
Jersey Shore, 5,112—Lycoming	Gen	NPAasn	81	72	22	531	2,810
Community Hospital	Gen	NPAasn	241	202	60	1,411	6,275
Johnstown, 16,148—Cambria	Gen	NPAasn	55	50	..	...	68
Conemaugh Valley Memorial Hospital*†	Gen	NPAasn	220	158	40	724	4,970
Babbs Hospital	Gen	NPAasn	35	28	12	210	766
Lee Homeopathic Hospital	Gen	NPAasn	91	72	28	735	2,740
Mendenhall Maternity Hosp.	Mat	Indiv	1,001	962	..	...	50
Mersey Hospital	Gen	Church	100	68	20	611	2,629
Kane, 6,103—McKean	Gen	NPAasn	36	31	8	359	981
Community Hospital	Gen	NPAasn	100	91	..	...	195
Kane Summit Hospital	Gen	NPAasn	32	31	22	360	966
Kingston, 20,679—Luzerne	Gen	NPAasn	64	41	..	...	1,001
Nesbitt Memorial Hosp.*†	Gen	NPAasn	100	68	20	611	2,629
Kittanning, 7,550—Armstrong	Gen	NPAasn	36	31	8	359	981
Armstrong County Hospital	Gen	NPAasn	100	91	..	...	195
Lancaster, 61,315—Lancaster	Gen	NPAasn	32	31	22	360	966
Lancaster General Hosp.*†	Gen	NPAasn	64	41	..	...	1,001
Rossmore Sanatorium	TB	CyCo	100	68	20	611	2,629
St. Joseph's Hospital*†	Gen	Church	32	31	22	360	966
Lansdale, 9,316—Montgomery	Gen	NPAasn	100	68	20	611	2,629
Elm Terrace Hospital	Gen	NPAasn	32	31	22	360	966
Latrobe, 11,111—Westmoreland	Gen	NPAasn	100	68	20	611	2,629
Latrobe Hospital	Gen	NPAasn	32	31	22	360	966
Laurelton, 327—Union	McDe	State	1,001	962	..	...	50
Laurelton State Village	State	State	100	68	20	611	2,629
Lebanon, 27,206—Lebanon	Gen	NPAasn	36	31	8	359	981
Good Samaritan Hospital	Gen	Corp	100	68	20	611	2,629
Lebanon Sanatorium	Gen	Corp	36	31	8	359	981
Letsdale, 2,332—Allegheny	Gen	NPAasn	100	91	..	...	195
D. T. Watson Home for Crippled Children	Orth	NPAasn	32	31	22	360	966
Lewistown, 3,571—Union	Gen	Church	64	41	..	...	1,001
Evangelical Hospital	Gen	USPHS	32	31	22	360	966
U. S. Penitentiary Hospital	Inst	USPHS	64	41	..	...	1,001

Hospitals and Sanatoriums	Type of Service	Owned or Controlled by	Beds	Average Census	Russians	Number of Births	Admissions +
Lewistown, 13,017—Mifflin							
Lewistown Hospital*†	Gen	NPAasn	92	89	21	617	2,624
Limeport, 250—Lehigh							
Sacred Heart Sanatorium	Unit of Sacred Heart Hospital, Allentown						
Lock Haven, 10,810—Clinton							
Lock Haven Hospital*†	Gen	NPAasn	71	52	20	445	2,137
Tenah Private Hospital	Gen	Indiv	28	10	4	67	516
Mayview, 120—Allegheny							
Mayview State Hospital	Ment	State	3,204	3,037	..	...	503
Pittsburgh City Home and Hospital*†	GenInst	City	698	561	9	3	573
McKeesport, 55,355—Allegheny							
McKeesport Hospital*†	Gen	NPAasn	275	212	50	1,785	6,423
McKees Rocks, 17,021—Allegheny							
Ohio Valley General Hosp.*†	Gen	NPAasn	59	48	24	603	2,108
Mendville, 18,919—Crawford							
Mendville City Hospital*†	Gen	NPAasn	110	80	26	680	3,327
Spencer Hospital*†	Gen	NPAasn	109	98	29	703	3,261
Media, 5,351—Delaware							
Media Hospital	Gen	Indiv	21	9	4	38	200
Mercer, 2,272—Mercer							
Mercer Cottage Hospital	Gen	Corp	50	33	4	143	1,515
Mercer Sanitarium	N&M	Part	42	37	..	...	155
Meyersdale, 3,250—Somerset							
Hazel McGilvery Hospital	Gen	NPAasn	14	7	5	121	459
Meyersdale Wenzel Hospital	Gen	Indiv	15	4	3	22	143
Monaca, 7,661—Beaver							
Beaver County Sanatorium	TB	County	62	58	..	...	96
Monaca, 20,257—Westmoreland							
Gemmill Hospital	ENT	Part	15	6	..	...	637
Monongahela, 8,825—Washington							
Memorial Hospital	Gen	NPAasn	75	60	24	537	1,883
Mount Pleasant, 5,824—Westmoreland							
Henry Clay Frick Memorial Hospital	Gen	NPAasn	71	45	28	630	2,630
Muney, 2,406—Lycoming							
Muney Valley Hospital	Gen	NPAasn	20	16	6	131	457
Nanticoke, 24,287—Luzerne							
Nanticoke State Hospital	Gen	State	120	92	10	417	2,852
New Brighton, 9,670—Beaver							
Beaver Valley General Hospital	Gen	NPAasn	70	56	18	462	2,470
New Castle, 47,628—Lawrence							
Jameson Memorial Hosp.*†	Gen	NPAasn	145	109	37	1,058	5,581
New Castle Hospital	Gen	Church	110	91	22	671	4,089
New Kensington, 24,055—Westmoreland							
Citizens General Hospital	Gen	NPAasn	134	108	33	1,192	3,828
New Wilmington, 1,018—Lawrence							
Overlook Sanitarium	Conv	Part	35	24	..	...	203
Norristown, 38,181—Montgomery							
Montgomery Hospital	Gen	NPAasn	134	111	30	904	5,207
Norristown State Hospital*†	Ment	State	4,414	4,343	..	...	838
Sacred Heart Hospital	Gen	Church	75	49	25	573	1,683
Oakbourne (West Chester P.O.), 100—Chester							
Pennsylvania Epileptic Hospital and Colony Farm	Epilep	NPAasn	113	110	..	...	20
Oil City, 20,370—Venango							
Oil City Hospital	Gen	NPAasn	120	86	20	564	2,805
Palmerton, 7,475—Carbon							
Palmerton Hospital	Gen	NPAasn	65	55	11	325	2,002
Peekville, 8,106—Lackawanna							
Mid-Valley Hospital	Gen	NPAasn	64	42	15	357	1,511
Pennhurst (Spring City P.O.), 100—Chester							
Pennhurst State School	McDe	State	2,500	2,283	..	...	106
Philadelphia, 1,931,331—Philadelphia							
American Hospital for Diseases of the Stomach	Gen	NPAasn	34	21	6	141	767
American Oncologic Hosp.*†	SkCa	NPAasn	51	21	..	...	422
Anderson Hospital	Gen	NPAasn	80	32	56	486	3,026
Babbs Hospital	Chil	NPAasn	14	9	..	...	235
Broad Street Hospital	Gen	NPAasn	80	48	30	754	2,210
Chestnut Hill Hospital*†	Gen	NPAasn	104	77	36	616	2,797
Children's Heart Hospital	Card	NPAasn	60	58	..	...	108
Children's Hospital*†	Chil	NPAasn	142	98	..	...	2,124
Children's Hospital of the Mary J. Drexel Home	Chil	Church	50	26	..	...	1,106
Columbus Hospital	Gen	Church	32	31	18	438	2,012
Community Hospital	Gen	NPAasn	40	11	12	59	157
Crothers Dulles Hospital	Unit of Hospital of Univ. of Pennsylvania						
Doctors Hospital	Gen	NPAasn	157	90	43	773	3,161
Eastern State Penitentiary Hospital	Inst	State	53	14	..	...	733
Falmount Farm	N&M	Corp	46	36	..	...	377
Frankford Hospital*†	Gen	NPAasn	144	113	48	1,315	4,342
Frederick Douglass Memorial Hospital	Gen	NPAasn	76	46	12	238	1,222
Friends Hospital*†	N&M	NPAasn	170	139	..	...	200
Garratson Hospital	Unit of Temple University Hospital						
Germantown Dispensary and Hospital*†	Gen	NPAasn	345	236	65	1,973	7,144
Graduate Hospital of the University of Pennsylvania	Gen	NPAasn	461	205	..	...	10
Hahnemann Hospital*†	Gen	NPAasn	500	327	166	2,224	11,681
Hall-Mercer Hospital	Associated with Institute of the Pennsylvania Hospital						
Home for Consumptives	TB	Church	101	82	..	...	224
Hospital of the Protestant Episcopal Church*†	Gen	Church	488	319	62	1,801	7,726

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hospital of the University of Pennsylvania**+AO	Gen	NPAssn	634	449	64	1,248	13,429
Hospital of the Woman's Medical College of Pennsylvania**+AO	Gen	NPAssn	166	111	40	940	3,837
Institute of the Pennsylvania Hospital**+AO	N&M	NPAssn	65	48	..	..	503
Jeunes Hospital**+AO	Cancer	NPAssn	74	42	..	..	547
Jefferson Medical College Hospital**+AO	Gen	NPAssn	694	606	53	1,514	14,312
Jewish Hospital**+AO	Gen	NPAssn	352	298	69	1,641	8,160
Joseph Price Memorial Hosp.**+AO	Gen	NPAssn	62	35	13	96	721
Kensington Hospital for Women**+AO	GynMat	NPAssn	66	45	35	1,091	1,700
Lankenau Hospital**+AO	Gen	NPAssn	259	183	34	792	5,092
Lying-In Hospital	Unit of Pennsylvania Hospital						
Memorial Hospital**+AO	Gen	NPAssn	99	74	19	606	2,824
Mercy Hospital**+AO	Gen	NPAssn	110	82	15	412	2,284
Methodist Hospital**+AO	Gen	Church	199	130	47	794	4,035
Misericordia Hospital**+AO	Gen	Church	192	178	38	1,326	5,531
Mount Sinai Hospital**+AO	Gen	NPAssn	262	217	55	1,180	6,057
National Stomach Hospital	Gen	NPAssn	45	13	7	75	445
Nazareth Hospital**+AO	Gen	Church	159	99	35	1,078	3,670
Northeastern Hospital**+AO	Gen	NPAssn	57	62	15	665	2,467
Northern Liberties Hospital	Gen	NPAssn	67	37	11	189	1,486
Northwestern General Hospital	Unit of Temple University Hospital						
Pennsylvania Hospital**+AO	Gen	NPAssn	454	293	130	2,334	8,161
Pennsylvania Hospital, Department for Mental and Nervous Diseases**+AO	N&M	NPAssn	220	183	..	..	325
Philadelphia General Hospital**+AO	Gen	City	2,400	1,689	95	1,505	24,026
Philadelphia Hospital for Contagious Diseases**+AO	Iso	City	1,077	276	..	..	3,444
Philadelphia Psychiatric Hospital**+AO	Ment	NPAssn	60	44	..	..	434
Philadelphia State Hospital**+AO	Ment	State	6,182	5,945	..	..	1,161
Presbyterian Hospital**+AO	Gen	Church	567	277	42	856	6,041
Preston Retreat**+AO	Mat	NPAssn	50	16	35	374	439
Rush Hospital for Consumption and Allied Diseases**+AO	TB	NPAssn	166	93	..	..	85
St. Agnes Hospital**+AO	Gen	Church	346	247	78	2,052	7,333
St. Christopher's Hospital for Children**+AO	Chil	NPAssn	85	59	..	..	1,906
St. Joseph's Hospital**+AO	Gen	Church	222	169	44	944	4,016
St. Luke's and Children's Medical Center**+AO	Gen	NPAssn	251	144	83	1,414	5,282
St. Mary's Hospital**+AO	Gen	Church	206	181	44	1,054	4,913
St. Vincent's Hospital for Women and Children**+AO	Gen	Church	137	59	24	694	1,079
Shriners Hospital for Crippled Children**+AO	Orth	NPAssn	120	56	..	..	242
Skin and Cancer Hospital**+AO	SkCa	NPAssn	33	28	..	..	191
Stetson Hospital**+AO	Gen	NPAssn	75	59	12	363	1,934
Temple University Hospital**+AO	Gen	NPAssn	432	265	54	1,790	11,511
U. S. Naval Hospital**+AO	Navy	1,950	1,372	..	..	..	14,452
Urologic Clinic	Urol	Part	15	5	..	..	312
Wills Hospital**+AO	Eye	NPAssn	260	141	..	..	3,655
Wolfe Clinic	MedCard	Indiv	25	20	..	..	862
Woman's Hospital**+AO	Gen	NPAssn	125	97	41	1,391	3,504
Women's Homeopathic Hospital**+AO	Gen	NPAssn	100	93	40	686	2,790
Phillipsburg, 3,063—Centre Benson Sanatorium	Gen	Indiv	17	11	9	124	511
Phillipsburg State Hospital**+AO	Gen	State	132	95	18	381	2,050
Phoenixville, 12,282—Chester Phoenixville Hospital**+AO	Gen	NPAssn	57	34	12	348	1,555
Pittsburgh, 671,650—Allegheny Allegheny General Hospital**+AO	Gen	NPAssn	554	416	54	1,659	10,809
Belvedere General Hospital**+AO	Gen	NPAssn	40	25	10	122	906
Children's Hospital**+AO	Chil	NPAssn	194	143	..	..	4,174
City Tuberculosis Hospital**+AO	TB	City	455	389	..	..	485
Elizabeth Steel Magee Hospital**+AO	Gen	NPAssn	309	256	111	3,616	7,669
Eye, Ear, Nose and Throat Hospital**+AO	ENT	NPAssn	95	53	..	..	4,847
Fairview Sanatorium	N&M	Corp	12	8	15	508	17
Haddon Hospital	Gen	Corp	20	15	15	508	8,6
Mercy Hospital**+AO	Gen	Church	630	598	48	1,476	14,405
Montefiore Hospital**+AO	Gen	NPAssn	225	181	32	844	5,055
Municipal Hospital for Contagious Diseases	Iso	City	224	57	..	..	1,218
Passavant Hospital**+AO	Gen	Church	100	61	20	256	2,281
Pittsburgh Hospital**+AO	Gen	NPAssn	186	179	24	920	4,516
Presbyterian Hospital**+AO	Gen	NPAssn	240	169	..	..	4,814
Rosella Foundling and Maternity Hospital**+AO	MatCh	NPAssn	110	97	18	386	711
St. Francis Hospital**+AO	Gen	NPAssn	640	599	69	1,510	12,158
St. John's General Hospital**+AO	Gen	NPAssn	197	162	53	1,754	5,810
St. Joseph's Hospital and Dispensary**+AO	Gen	Church	161	101	30	818	3,138
St. Margaret Memorial Hospital**+AO	Gen	Church	129	72	21	412	2,191
Shadyside Hospital**+AO	Gen	NPAssn	262	216	40	1,154	7,525
South Side Hospital**+AO	Gen	NPAssn	207	145	18	672	5,064
Tuberculosis League Hospital**+AO	TB	NPAssn	150	149	..	..	159
U. S. Marine Hospital**+AO	Gen	USPHS	73	65	..	..	1,224
Veterans Admin. Facility**+AO	GenTb Vet		767	641	..	..	4,405

(Key to symbols and abbreviations is on page 855)

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Western Pennsylvania Hospital**+AO	Gen	NPAssn	575	410	61	1,581	13,497
Western State Penitentiary Hospital	Inst	State	46	26	..	..	1,095
Western State Psychiatric Hospital	Ment	State	136	71	..	..	156
Woman's Hospital**+AO	Gen	NPAssn	148	59	..	..	1,524
Pittston, 17,828—Luzerne Pittston Hospital**+AO	Gen	NPAssn	112	88	18	601	4,038
Polk, 3,690—Venango Polk State School	MeDe	State	3,320	3,201	..	..	228
Pottstown, 20,194—Montgomery Hill School Infirmary	Inst	NPAssn	40	7	..	..	423
Homeopathic Hospital	Gen	NPAssn	47	43	16	359	1,237
Pottstown Hospital**+AO	Gen	NPAssn	63	51	12	431	2,404
Pottsville, 24,530—Schuylkill Lemos B. Warne Hospital**+AO	Gen	Indiv	75	..	..	..	No data supplied
A. C. Milliken Hospital**+AO	Gen	NPAssn	72	64	20	600	2,526
Pottsville Hospital**+AO	Gen	NPAssn	155	103	117	414	2,721
Punkstutawney, 9,482—Jefferson Adrian Hospital**+AO	Gen	NPAssn	76	67	10	419	2,047
Quakertown, 5,150—Bucks Quakertown Hospital**+AO	Gen	NPAssn	58	44	19	370	1,646
Ransom, 150—Lackawanna Ransom Mental Hospital	Ment	County	397	384	..	..	48
Reading, 110,568—Berks Berks County Tuberculosis Sanatorium**+AO	TB	County	138	117	..	..	132
Community General Hospital**+AO	Gen	NPAssn	113	72	21	521	2,482
Reading Hospital**+AO	Gen	NPAssn	299	189	57	1,460	6,890
St. Joseph Hospital**+AO	Gen	Church	183	142	32	872	4,725
Renovo, 3,784—Clinton Renovo Hospital	Gen	NPAssn	24	12	6	158	623
Retreat, 2,000—Luzerne Retreat State Hospital**+AO	Ment	State	1,175	1,169	..	..	208
Ridgway, 6,253—Elk Elk County General Hospital	Gen	NPAssn	69	42	14	246	1,285
Ridley Park, 3,887—Delaware Taylor Hospital	Gen	NPAssn	70	63	18	590	2,653
Roaring Spring, 2,724—Blair Nason Hospital	Gen	NPAssn	58	29	12	203	1,067
Rochester, 7,441—Beaver Rochester General Hospital**+AO	Gen	NPAssn	89	83	10	820	4,186
Royersford, 3,605—Montgomery Montgomery County Institution District Home	ChrInst	County	92	69	..	..	135
St. Marys, 7,653—Elk Andrew Kaul Memorial Hosp. Gen	Church		75	56	18	397	2,250
Sayre, 7,560—Bradford Robert Packer Hospital**+AO	Gen	NPAssn	304	201	21	741	7,837
Seranton, 140,404—Lackawanna Hahnemann Hospital**+AO	Gen	NPAssn	109	83	16	897	2,945
Lackawanna County Tuberculosis Hospital	TB	County	150	127	..	..	99
Mercy Hospital**+AO	Gen	Church	84	77	20	495	2,044
Moses Taylor Hospital**+AO	Gen	NPAssn	120	69	..	..	1,855
St. Joseph's Children's and Maternity Hospital**+AO	MatChil	Church	185	153	4	62	252
St. Mary's Mater Misericordiae Hospital	Gen	Church	71	54	14	326	1,618
Seranton State Hospital**+AO	Gen	State	290	187	20	496	4,332
West Side Hospital**+AO	Gen	NPAssn	65	52	10	294	1,391
Sellersville, 2,115—Bucks Grand View Hospital**+AO	Gen	NPAssn	74	46	25	536	1,592
Sewickley, 5,614—Allegheny Sewickley Valley Hospital**+AO	Gen	NPAssn	151	103	34	1,187	4,228
Shamokin, 18,810—Northumberland Shamokin State Hospital**+AO	Gen	State	89	71	22	630	2,635
Sharon, 25,622—Mercer Christian H. Buhl Hospital**+AO	Gen	NPAssn	233	141	44	1,433	5,493
Shenandoah, 19,790—Schuylkill Locust Mountain State Hospital**+AO	Gen	State	77	61	18	348	2,405
Somerset, 5,430—Somerset Somerset Community Hosp.	Gen	NPAssn	70	49	12	253	1,971
South Mountain, 200—Franklin Pennsylvania State Sanatorium No. 1 (Mont Alto)	TB	State	1,700	1,071	..	..	662
Spangler, 3,201—Cambria Miners' Hospital of Northern Cambria**+AO	Gen	NPAssn	82	61	17	463	2,451
State College, 6,226—Centre Pennsylvania State College Health Service Hospital	Inst	State	31	12	..	..	1,142
Sunbury, 15,462—Northumberland Mary M. Packer Hospital**+AO	Gen	NPAssn	74	54	14	420	1,993
Susquehanna, 2,740—Susquehanna Simon H. Barnes Memorial Hospital	Gen	NPAssn	16	14	5	57	307
Taylor, 9,002—Lackawanna Taylor Hospital	Gen	NPAssn	95	102	17	857	2,585
Titusville, 5,126—Crawford Titusville Hospital	Gen	NPAssn	49	45	13	424	2,020
Torrance, 500—Westmoreland Torrance State Hospital**+AO	Ment	State	2,563	2,285	..	..	623

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Uniontown, 21,810—Payette							
Uniontown Hospital*AO	Gen	NPAasn	210	196	20	816	6,123
Warren, 11,891—Warren							
Warren General Hospital	Gen	NPAasn	81	62	20	576	2,136
Warren State Hospital*AO	Ment	State	2,690	2,575	..	..	750
Washington, 26,164—Washington							
Hillview Sanitarium*	Gen	Corp	78	93	..	..	308
Washington Hospital*AO	Gen	NPAasn	183	123	10	992	4,136
Wawa, 300—Delaware							
Wawa Chest Hospital	TB	NPAasn	11	11	..	..	56
Waymart, 1,095—Wayne							
Farview State Hospital	Ment	State	1,071	1,062	..	..	91
Waynesboro, 10,231—Franklin							
Waynesboro Hospital	Gen	NPAasn	53	51	22	527	2,108
Waynesburg, 1,891—Greene							
Greene County Memorial Hospital	Gen	NPAasn	72	57	20	285	2,767
Wernersville, 1,160—Berks							
Wernersville State Hospital	Ment	State	1,000	1,855	..	..	582
West Chester, 13,289—Chester							
Chester County Hospital*AO	Gen	NPAasn	152	99	26	706	3,112
Homeopathic Hospital of Chester County*	Gen	NPAasn	61	12	16	253	1,182
Marshall Square Sanitarium, N&M	Part		80	65	..	..	201
White Haven, 1,528—Luzerne							
White Haven Sanatorium*AO	TB	NPAasn	240	151	..	..	253
Wilkes-Barre, 862 G—Luzerne							
Mercy Hospital*AO	Gen	Church	195	188	25	681	4,676
Wilkes-Barre General Hospital*AO	Gen	NPAasn	160	218	13	1,161	7,073
Wyoming Valley Homeopathic Hospital*AO	Gen	NPAasn	81	69	25	513	2,267
Wilkesburg, 29,853—Allegheny							
Columbia Hospital*AO	Gen	Church	178	177	18	1,161	4,868
Williamsport, 41,453—Lycoming							
Rothfuss Clinic and Hospital	Indiv		25	11	10	181	636
Williamsport Hospital*AO	Gen	NPAasn	231	181	11	1,248	5,941
Willow Grove, 12,600—Montgomery							
U. S. Naval Air Station Dispensary	Gen	Navy	34	8	..	..	658
Windber, 9,057—Somerset							
Windber Hospital*AO	Gen	NPAasn	197	86	10	351	2,707
Woodville, 4,000—Allegheny							
Allegheny County Institution							
District Hospital	Gen	Inst	823	678	..	..	401
Woodville State Hospital	Ment	State	2,652	2,534	..	..	410
York, 36,712—York							
West Side Sanitarium*	Gen	Indiv	50	10	10	208	1,201
York Hospital*AO	Gen	NPAasn	196	176	32	1,370	5,237

Related Institutions

Bellefonte, 5,501—Centre							
Western State Penitentiary Hospital	Inst	State	22	5	..	..	192
Bellevue, 10,488—Allegheny							
Salvation Army Women's Home and Hospital	Mat	Church	10	5	10	49	76
Broomall, 1,200—Delaware							
Convalescent Hospital	Conv	NPAasn	21	21	..	..	292
Bryn Mawr, 10,207—Montgomery							
Bryn Mawr College Infirmary	Inst	NPAasn	20	7	..	..	997
Cambridge Springs, 1,897—Crawford							
San Rosario Sanitarium	Conv	Church	32	17	..	..	110
Camp Hill, 3,630—Cumberland							
Pennsylvania Industrial School	Inst	State	39	15	..	..	1,700
Chambersburg, 14,852—Franklin							
Chambersburg Maternity Home	Mat	Part	8	5	9	216	238
Chester, 59,245—Delaware							
Mercy Hospital	Gen	NPAasn	25	25	12	181	1,179
Darby, 10,331—Delaware							
St. Francis' Country House	Incur	Church	58	51	..	..	300
Elizabethtown, 3,719—Cambria							
Cambria County Hospital	Inst	County	118	100	..	..	460
Embsreeville, 500—Chester							
Embsreeville State Hospital	Ment	State	365	365	..	..	94
Erle, 116,955—Erie							
Lakeview Hospital	Iso	City	80	..	8	..	73
Harrisburg, 900—Allegheny							
Harrisburg Convalescent Home	Conv	NPAasn	16	15	30	..	325
Harrisburg, 83,893—Dauphin							
Dauphin County Hospital	Inst	County	160	155	..	..	147
Johnstown, 64,668—Cambria							
Municipal Hospital	Iso	City	62	5	..	..	70
Lancaster, 61,315—Lancaster							
Lancaster County Institution							
District	Chr	Ment	221	186	..	..	204
Lewistown, 3,671—Union							
Ziegler Memorial Infirmary for Men and Infirmary for Women	Inst	NPAasn	21	3	..	..	179
Malvern, 1,680—Chester							
Point Comfort Rest Home	Conv	Indiv	11	11	..	..	76
Mercer, 2,272—Mercer							
Mercer County Home and Hospital	Chr	County	78	73	..	..	26

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Middletown, 7,016—Dauphin							
Odd Fellows' Home	Inst	NPAasn	45	45	..	..	13
Morganza, 900—Washington							
Pennsylvania Training School Hospital	Inst	State	40	11	..	..	703
North East, 3,701—Erie							
St. Barnabas' House by the Lake	Incur	Church	35	35	..	..	9
Oakbourne (West Chester P.O.), 100—Chester							
James C. Smith Memorial Home	Conv	Church	21	19	..	..	253
Olyphant, 9,252—Lackawanna							
Blakely Home and Hospital	Ment	County	234	220	..	..	35
Philadelphia, 1,031,331—Philadelphia							
Bella Vista Sanatorium	N&M	Indiv	75	69	..	..	101
Belmont Hospital, Salvation Army Hospital	Mat	Church	10	5	10	165	191
Florence Crittenton Home	Mat	NPAasn	14	12	14	26	41
Kenwood Sanitarium	N&M	Corp	40	..	..	..	No data supplied
Philadelphia County Prison Hospital (Holmesburg)	Inst	County	32	6	..	..	546
Philadelphia County Prison Hospital (Reed Street)	Inst	CyCo	31	9	..	..	519
Philadelphia Home for Incurables	Incur	NPAasn	241	236	..	..	54
Pine Hall Convalescent Home	Conv	Indiv	22	22	..	..	50
Sharon Hall	Conv	Corp	50	40	..	..	270
Pittsburgh, 671,659—Allegheny							
Hasley Nursing Home	Conv	Indiv	22	16	..	..	49
Retreat, 2,000—Luzerne							
Luzerne County Home and Infirmary	Inst	County	500	206	..	..	53
Rochester, 7,411—Beaver							
Passavant Memorial Homes for the Care of Epileptics	Epl	Church	175	123	..	..	16
Seranton, 140,401—Lackawanna							
Municipal Hospital	Iso	City	45	..	..	..	..
Sellingsgrove, 2,877—Snyder							
Sellingsgrove State Colony for Epileptics	Epl	State	682	857	..	..	171
Somerset, 5,130—Somerset							
Somerset State Hospital	Ment	State	535	470	..	..	56
Towanda, 1,151—Bradford							
Mills Hospital	Gen	Indiv	27	14	8	162	279
Wawa, 300—Delaware							
Sanatorium School	Orth	Indiv	23	23	..	..	25
Willow Grove, 12,000—Montgomery							
Willow Crest for Convalescents	Conv	NPAasn	79	65	..	..	1,011

RHODE ISLAND

Hospitals and Sanatoriums

Central Falls, 25,218—Providence							
Notre Dame Hospital	Gen	NPAasn	50	46	21	551	2,729
East Greenwich, 3,842—Kent							
Crawford Allen Memorial Hospital	Unit of Rhode Island Hospital, Providence						
East Providence, 32,165—Providence							
Emma Pendleton Bradley Home	Nerv	Chil	50	44	..	..	62
Hillsgrove, 1,000—Kent							
St. Joseph's Hospital	TB	Church	65	35	..	..	34
Howard, 5,000—Providence							
State Hospital for Mental Diseases*AO	Ment	State	3,000	2,773	..	..	731
State Infirmary*	Gen	State	988	881	20	..	1,117
Newport, 30,532—Newport							
Newport Hospital*AO	Gen	Corp	151	124	47	918	3,224
Station Hospital	Gen	Army	70	30	..	..	1,041
U. S. Naval Hospital*AO	Gen	Navy	1,000	850	..	..	8,491
Pawtucket, 75,797—Providence							
Memorial Hospital*AO	Gen	NPAasn	166	19	30	915	4,736
Providence, 253,504—Providence							
Butler Hospital*AO	N&M	NPAasn	174	141	..	..	154
Charles V. Chapin Hospital*AO	Tb	Iso	265	156	..	..	2,391
Homeopathic Hospital*AO	Gen	NPAasn	162	135	34	1,011	5,073
Jane Brown Memorial Hosp. Unit of Rhode Island Hospital, Providence							
Miriam Hospital	Gen	NPAasn	63	43	14	554	1,711
Providence Lying-In Hosp.*AO	Mat	NPAasn	175	147	175	5,242	5,717
Rhode Island Hospital*AO	Gen	NPAasn	463	386	..	..	8,102
St. Joseph's Hospital*AO	Gen	Church	325	239	50	1,665	7,869
Quonset Point, —Washington							
U. S. Naval Air Station Dispensary	Gen	Navy	310	146	..	..	6,021
Wakefield, 4,000—Washington							
South County Hospital*	Gen	NPAasn	46	31	11	350	1,224
Wallum Lake, 100—Providence							
State Sanatorium*AO	TB	State	618	478	..	..	371
Westerly, 11,190—Washington							
Westerly Hospital*	Gen	NPAasn	61	46	12	483	1,613
Woonsocket, 49,303—Providence							
Woonsocket Hospital*	Gen	NPAasn	145	93	39	1,033	3,700

RHODE ISLAND—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Hoxsie, 135—Kent Lakeside Home and Mary Murray Preventorium..... TB	NPAsn		49	39	..	...	139
LaFayette, 600—Washington Fletcher School..... McDe	State		805	803	..	...	151
Providence, 233,504—Providence St. Elizabeth Home for Incur- ables..... Incur	Church		70	63	..	...	16

SOUTH CAROLINA

Hospitals and Sanatoriums

Abbeville, 4,930—Abbeville Abbeville County Memorial Hospital..... Gen	NPAsn		41	18	5	120	638
Aiken, 6,163—Aiken Aiken County Hospital..... Gen	County		60	60	12	341	2,818
Anderson, 19,424—Anderson Anderson County Hosp. Gen	NPAsn		116	76	15	493	3,593
St. Mary's Hospital..... Gen	NPAsn		54	26	6	42	635
Beaufort, 3,185—Beaufort U. S. Naval Air Station Dis- pensary..... Gen	Navy		54	...	..	Estab. 1943	
Bennettsville, 4,895—Marlboro Marlboro County General Hos- pital..... Gen	NPAsn		32	35	8	259	1,892
Camden, 5,747—Kershaw Camden Hospital..... Gen	NPAsn		74	39	16	246	1,397
Charleston, 71,275—Charleston Baker Memorial Sanatorium..... Gen	NPAsn		60	46	15	517	2,786
Roper Hospital..... Gen	NPAsn		330	309	40	1,182	9,721
St. Francis Xavier Infirmary..... Gen	Church		103	71	26	802	3,470
U. S. Naval Hospital..... Gen	Navy		600	454	15	182	7,150
Chester, 6,392—Chester Pryor Hospital..... Gen	NPAsn		50	38	8	221	1,729
Clinton, 5,704—Laurens Hays Hospital..... Gen	NPAsn		20	10	5	78	470
Columbia, 62,396—Richland Columbia Hospital..... Gen	County		345	273	35	1,055	7,767
Good Samaritan-Waverly Hos- pital..... Gen	NPAsn		53	30	7	96	840
Orthopedic Hospital..... Orth	Indiv		19	11	..	...	234
Providence Hospital..... Gen	Church		96	70	14	262	2,899
Quarantine Hospital for Vene- real Disease..... Ven	State		500	500	..	...	1,400
Ridgewood Tuberculosis Camp TB	NPAsn		70	36	..	...	32
South Carolina Baptist Hos- pital..... Gen	Church		103	92	6	456	2,860
South Carolina State Hosp. Gen	State		4,688	1,687	..	...	1,198
Veterans Admin. Facility..... Gen	Vet		608	381	..	...	3,495
Waverly Sanitarium..... N&M	Corp		25	21	..	...	181
Conway, 5,066—Horry Conway Hospital..... Gen	NPAsn		65	40	16	557	3,563
Florence, 16,051—Florence Florence-Darlington Tubercu- losis Sanatorium..... TB	Counties		101	81	..	...	105
McLeod Infirmary..... Gen	NPAsn		175	175	25	341	5,433
Gaffney, 7,626—Cherokee Cherokee County Hospital..... Gen	County		56	39	8	250	1,736
Greenville, 34,734—Greenville Greenville County Tuberculo- sis Sanatorium..... TB	County		81	74	..	...	80
Greenville General Hosp. Gen	City		284	230	31	1,273	8,007
Dr. Jerey's Private Hospital ENT	Part		15	3	..	...	475
St. Francis Hospital..... Gen	Church		118	83	26	898	3,678
Shriners Hospital for Crippled Children..... Orth	NPAsn		60	51	..	...	235
Working Benevolent Hospital Gen	NPAsn		22	15	2	52	471
Greenwood, 13,020—Greenwood Brewer Hospital..... Gen	NPAsn		36	18	6	46	429
Greenwood Hospital..... Gen	NPAsn		71	45	8	304	2,223
Hartsville, 5,399—Darlington Byerly Hospital..... Gen	NPAsn		66	37	10	378	2,934
Powe Hospital..... Gen	Indiv		32	14	4	75	566
Kingstree, 3,182—Williamsburg Kelley Memorial Hospital..... Gen	NPAsn		60	50	12	172	1,232
Lake City, 2,522—Florence Whitehead Infirmary..... Gen	Indiv		11	11	5	18	67
Laurens, 4,430—Laurens Marion Sims Memorial Hosp. Gen	NPAsn		47	32	11	473	1,885
Laurens County Hospital..... Gen	County		34	21	7	179	922
Moncks Corner, 1,165—Berkeley Berkeley County Hospital..... GenTb	NPAsn		53	15	8	149	698
Moultrieville, 515—Charleston Stallion Hospital..... Gen	Army		102	48	4	30	2,532
Mullins, 4,392—Marion Martins Private Hospital..... Gen	Indiv		35	22	6	120	1,784
Mullins Hospital..... Gen	NPAsn		69	33	12	236	2,069
Navy Yard, 1,025—Charleston Pinhaven Sanatorium..... TB	County		64	62	..	...	123
Newberry, 7,510—Newberry Newberry County Hospital..... Gen	NPAsn		23	20	9	238	1,138
Orangeburg, 10,521—Orangeburg Tri-County Hospital..... Gen	City		132	103	12	461	4,478
Urological Institute..... Unit of Tri-County Hospital							

SOUTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Parris Island, 250—Beaufort U. S. Naval Hospital..... Gen	Navy		430	367	8	133	7,475
Ridgeland, 1,021—Jasper Ridgeland Hospital..... Gen	NPAsn		30	...	7	Reorganized	
Rock Hill, 15,060—York Dunlap Hospital..... Gen	Indiv		14	1	..	...	254
St. Philip's Mercy Hospital..... Gen	Church		62	38	6	329	1,935
York County Hospital..... Gen	County		78	41	14	335	1,973
Seneca, 2,165—Oconee Oconee County Hospital..... Gen	NPAsn		35	25	8	248	1,330
Spartanburg, 32,249—Spartanburg Mary Black Memorial Hospi- tal..... Gen	NPAsn		65	51	10	187	2,991
Spartanburg General Hosp. GenTb	County		349	155	30	797	6,147
State Park, 100—Richland Palmetto Sanatorium..... Unit of South Carolina Sanatorium	State		550	479	..	...	707
Summerville, 3,023—Dorchester Dorchester County Hospital..... Gen	County		50	20	15	216	915
Sumter, 15,874—Sumter Tuomey Hospital..... Gen	NPAsn		120	84	22	481	2,899
Travellers Rest, 1,200—Greenville Coleman Hospital..... Gen	Part		15	8	5	72	550
Union, 8,478—Union Wallace Thomson Hospital..... Gen	City		25	17	7	226	897
Walterboro, 3,373—Colleton Charles-Esdorn Hospital..... Gen	Indiv		42	33	14	250	3,510
Woodruff, 3,508—Spartanburg Workman Memorial Hospital Gen	Indiv		12	10	2	38	582

Related Institutions

Clinton, 5,704—Laurens State Training School..... McDe	State		850	819	..	...	99
Newberry, 7,510—Newberry People's Hospital..... Gen	NPAsn		15	5	3	22	217

SOUTH DAKOTA

Hospitals and Sanatoriums

Aberdeen, 17,015—Brown St. Luke's Hospital..... Gen	Church		135	107	30	675	2,698
Belle Fourche, 2,496—Butte John Burns Memorial Hosp. Gen	NPAsn		30	10	10	83	690
Bowdle, 757—Edmunds Community Hospital..... Gen	NPAsn		10	1	4	32	207
Brookings, 5,316—Brookings Brookings Municipal Hosp. Gen	City		48	27	8	204	2,203
Burke, 692—Gregory Burke Hospital..... Gen	NPAsn		15	8	3	82	518
Cheyenne Agency, 121—Dewey Cheyenne River Indian Hosp. Gen	IA		40	19	8	69	376
Deadwood, 4,160—Lawrence St. Joseph's Hospital..... Gen	Church		50	24	12	191	978
Dell Rapids, 1,706—Minnehaha Dell Rapids Hospital..... Gen	Part		16	10	6	60	293
Eureka, 1,457—McPherson Eureka Community Hospital..... Gen	NPAsn		21	13	7	186	474
Faulkton, 747—Faulk Faulk County Hospital..... Gen	County		20	2	3	69	470
Flandreau, 2,212—Moody Flandreau Municipal Hospital Gen	City		18	6	5	76	273
Fort Meade, —Meade Station Hospital..... Gen	Army		120	52	2	18	812
Fort Thompson, 80—Buffalo Crow Creek Hospital..... Gen	IA		20	11	5	43	229
Gregory, 1,246—Gregory Mother of Grace Hospital..... Gen	Church		18	11	6	112	554
Hot Springs, 4,083—Fall River Lutheran Sanatorium and Hospital..... Gen	Church		59	55	4	77	744
Our Lady of Lourdes Hospital and Sanitarium..... Gen	Church		67	31	11	81	1,057
Veterans Admin. Facility..... Gen	Vet		281	145	..	...	791
Huron, 10,847—Beadle Sprague Hospital..... Gen	NPAsn		50	37	9	283	1,272
Lead, 7,520—Lawrence Homestake Hospital..... Gen	NPAsn		25	10	5	3	267
Lepperton, 1,751—Perkins Lennon Hospital..... Gen	Indiv		14	6	5	56	182
Madison, 3,018—Luke Madison Community Hosp. Gen	NPAsn		69	29	12	205	1,352
Milbank, 2,745—Grant St. Bernard's Providence Hos- pital..... Gen	Church		30	14	8	133	615
Miller, 1,460—Hand Miller Hospital and Clinic.... Gen	Part		13	9	7	91	477
Mitchell, 10,633—Davison Methodist State Hospital..... Gen	Church		109	83	15	263	2,934
St. Joseph Hospital..... Gen	Church		118	77	20	291	3,912
Mobridge, 3,003—Walworth Lowe Hospital..... Gen	Indiv		20	12	6	113	677
Mobridge Hospital..... Gen	NPAsn		39	...	No data supplied		

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Parkston, 1,305—Hutchinson	Gen	Church	13	10	6	141	572
St. Benedict Hospital.....	Gen	Church	102	75	18	227	2,700
Pierre, 4,323—Hughes	Gen	Church	102	75	18	227	2,700
St. Mary's Hospital.....	Gen	Church	102	75	18	227	2,700
Pine Ridge, 618—Shannon	Gen	IA	41	40	10	130	1,435
Rapid City, 13,841—Pennington	Gen	NPAssn	51	45	8	150	1,390
Black Hills General Hosp. A.....	Gen	NPAssn	51	45	8	150	1,390
St. John's McManama Hosp. talao	Gen	Church	100	83	25	430	2,693
St. Louis Sanatorium A.....	TB	IA	130	116	..	..	297
Redfield, 2,428—Spink	Gen	City	14	8	5	11	365
Badwin Community Hospital	Gen	City	14	8	5	11	365
Rosebud, 238—Todd	Gen	IA	40	59	7	99	1,107
Rosebud Agency Indian Hosp.	Gen	IA	40	59	7	99	1,107
Sanator, 10—Custer	Gen	IA	40	59	7	99	1,107
Moodle Memorial Tuberculosis Sanatorium	Unit of South Dakota State Sanatorium for Tuberculosis	State	192	153	..	..	102
South Dakota State Sanatorium for Tuberculosis.....	TB	State	192	153	..	..	102
Sioux Falls, 40,832—Minnehaha	Gen	Church	116	92	32	770	4,201
McKenna Hospital.....	Gen	NPAssn	138	112	20	776	5,690
Sioux Valley Hospital.....	Gen	NPAssn	138	112	20	776	5,690
Siouxton, 2,513—Roberts	Gen	IA	32	16	8	58	537
Siouxton Indian Hospital.....	Gen	IA	32	16	8	58	537
Volga, 632—Brookings	Gen	NPAssn	16	8	6	103	382
Volga Hospital.....	Gen	NPAssn	16	8	6	103	382
Watertown, 10,617—Codington	Gen	NPAssn	65	55	12	271	1,923
Watertown Hospital.....	Gen	NPAssn	65	55	12	271	1,923
Webster, 2,173—Day	Gen	Church	70	42	12	224	1,541
Webster Hospital.....	Gen	Church	70	42	12	224	1,541
Winner, 2,426—Tripp	Gen	Indiv	50	31	8	157	1,620
Winner General Hospital.....	Gen	Part	16	7	6	91	320
Yankton, 6,798—Yankton	Gen	Church	170	107	26	385	3,137
Sacred Heart Hospital.....	Gen	Church	170	107	26	385	3,137
Yankton State Hospital.....	Ment	State	1,570	1,620	..	..	375

Related Institutions

Flaudreau, 2,212—Moody	Inst	IA	26	3	..	..	367
Flaudreau Indian School Hospital.....	Inst	IA	26	3	..	..	367
Garretson, 606—Minnehaha	Gen	Indiv	10	1	2	9	50
DeVall Hospital.....	Gen	Indiv	10	1	2	9	50
Hot Springs, 4,033—Fall River	Inst	State	50	19	..	..	174
State Soldiers Home Hosp. A.....	Inst	State	50	19	..	..	174
Redfield, 2,428—Spink	State School and Home for the Blind.....	MeDe	750	630	..	..	54
Sioux Falls, 40,832—Minnehaha	State Memorial Hospital and Home.....	Conv	50	41	..	..	61
Wagner, 1,310—Charles Mix	Dugan Hospital.....	Gen	12	9	3	104	391
Dugan Hospital.....	Gen	IA	25	20	5	56	545
Yankton Indian Hospital.....	Gen	IA	25	20	5	56	545

TENNESSEE

Hospitals and Sanatoriums

Athens, 6,920—McMinn	Gen	Indiv	50	17	8	213	947
Epperson Clinic-Hospital.....	Gen	Part	20	14	11	212	684
Force Hospital.....	Gen	Part	10	5	..	..	586
Bristol, 14,004—Sullivan	ENT	Part	10	5	..	..	586
Hooks-English Infirmary.....	ENT	Part	10	5	..	..	586
Brownsville, 4,012—Haywood	Gen	NPAssn	30	15	5	75	861
Haywood County Memorial Hospital.....	Gen	NPAssn	30	15	5	75	861
Chattanooga, 128,113—Hamilton	Gen	CyCo	350	243	70	2,095	10,717
Baroness Erlanger Hosp. A.....	Gen	CyCo	20	14	7	119	917
Earl R. Campbell Clinic.....	Gen	Part	65	35	3	33	1,745
Newell and Newell Sanit. A.....	Gen	Part	65	35	3	33	1,745
Physicians and Surgeons Hospital.....	Gen	Indiv	10	18	8	273	850
Pine Breeze Sanatorium A.....	TB	NPAssn	270	238	..	..	390
T. C. Thompson Children's Hospital.....	Chil	CyCo	84	41	..	..	1,187
Woman's Clinic.....	Mat	Indiv	10	13	12	331	577
Clarksville, 11,532—Montgomery	Gen	Indiv	25	3	2	8	200
Clarksville Home Infirmary.....	Gen	NPAssn	42	27	15	380	1,395
Clarksville Hospital.....	Gen	NPAssn	42	27	15	380	1,395
Cleveland, 11,351—Bradley	Gen	Indiv	25	9	4	67	607
Physicians and Surgeons Hospital.....	Gen	Indiv	25	9	4	67	607
Speck Hospital.....	Gen	NPAssn	30	8	5	106	680
Columbia, 10,579—Maury	Gen	NPAssn	50	26	6	241	1,487
Kings Daughters Hospital.....	Gen	NPAssn	50	26	6	241	1,487
Dandridge, 488—Jefferson	Gen	Fed	12	4	1	5	271
Douglas Dunn Medical Unit.....	Gen	Fed	12	4	1	5	271
Dayton, 1,870—Rhea	Gen	Indiv	12	7	4	64	262
Broyles Private Hospital.....	Gen	Indiv	10	6	4	32	396
Thomson Hospital.....	Gen	Indiv	10	6	4	32	396
Dyersburg, 10,034—Dyer	Gen	Corp	38	17	8	123	1,023
Baird-Brewer General Hosp. A.....	Gen	Corp	38	17	8	123	1,023
Elizabethton, 8,516—Carter	Gen	Corp	30	17	5	208	1,219
St. Elizabeth General Hosp. A.....	Gen	Corp	30	17	5	208	1,219

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Erwin, 3,350—Unicoi	Gen	NPAssn	13	4	3	147	222
Erwin Community Hospital.....	Gen	NPAssn	13	4	3	147	222
Franklin, 4,120—Williamson	Gen	Part	16	12	4	236	874
Dan German Hospital.....	Gen	Part	16	12	4	236	874
Greeneville, 6,784—Greene	Gen	Indiv	10	5	3	54	370
Campbell's Hospital.....	Gen	Indiv	10	5	3	54	370
Greeneville Sanatorium and Hospital.....	Gen	Corp	50	25	10	102	1,052
Laughlin Clinic.....	Gen	Indiv	18	12	6	91	539
Leahline Reaves Sanatorium.....	TB	State	35	19	..	..	118
Takoma Hospital and Sanatorium.....	Gen	NPAssn	52	36	6	128	1,272
Humboldt, 5,160—Gibson	Gen	NPAssn	52	36	6	128	1,272
Oursler Clinic.....	Gen	Indiv	10	6	4	84	450
Jackson, 21,332—Madison	Gen	Part	30	18	6	127	849
Fitts-White Clinic.....	Gen	Part	30	18	6	127	849
Memorial Hospital.....	Gen	NPAssn	36	18	10	161	1,037
Webb-Williamson Hospital Clinic.....	Gen	Corp	29	20	6	205	1,208
Jefferson City, 2,576—Jefferson	Gen	Indiv	20	12	6	150	720
Jefferson Hospital.....	Gen	Indiv	20	12	6	150	720
Johnson City, 25,332—Washington	Gen	NPAssn	70	57	20	726	3,013
Appalachian Hospital.....	Gen	NPAssn	70	57	20	726	3,013
Budd Clinic and Hospital.....	Gen	Indiv	12	5	3	30	330
Campbell's Eye, Ear, Nose and Throat Hospital.....	ENT	Indiv	10	2	..	..	1,095
Jones Eye, Ear, Nose and Throat Hospital.....	ENT	Part	27	13	..	..	1,527
Kingsport, 14,404—Sullivan	Gen	NPAssn	92	65	25	1,013	3,666
Holston Valley Community Hospital.....	Gen	NPAssn	92	65	25	1,013	3,666
Knoxville, 111,580—Knox	TB	CyCo	145	87	..	..	91
Beverly Hills Sanatorium.....	TB	CyCo	145	87	..	..	91
Dr. H. E. Christenberry Eye, Ear, Nose and Throat Infirmary.....	ENT	Indiv	12	3	..	..	1,392
Eastern State Hospital.....	Ment	State	1,843	1,842	..	..	455
Fort Sanders Hospital.....	Gen	NPAssn	200	185	40	1,605	7,344
Knoxville General Hosp. A.....	Gen	City	285	161	40	1,214	7,714
St. Mary's Memorial Hosp. A.....	Gen	Church	100	93	25	471	2,800
La Follette, 4,010—Campbell	Gen	Indiv	20	11	6	124	613
La Follette Hospital.....	Gen	Indiv	20	11	6	124	613
Lawrenceburg, 3,807—Lawrence	Gen	Church	20	11	6	148	696
Lawrenceburg Sanitarium and Hospital.....	Gen	Church	20	11	6	148	696
Lebanon, 5,050—Wilson	Gen	Indiv	25	7	4	54	455
Murtha Gaston Hospital.....	Gen	Indiv	25	7	4	54	455
McFarland Hospital.....	Gen	Indiv	50	32	6	273	1,891
Lenoir City, 4,373—Loudon	Gen	Indiv	50	32	6	273	1,891
Fort Loudoun Dam Hospital.....	Indus	Fed	10	3	..	..	196
Lewisburg, 3,582—Marshall	Gen	Indiv	12	6	4	82	372
Wheat Memorial Hospital.....	Gen	Indiv	12	6	4	82	372
Loudon, 3,617—Loudon	Gen	County	30	18	14	133	606
Charles H. Bacon Hospital.....	Gen	County	30	18	14	133	606
Madison College, 510—Davidson	Gen	NPAssn	113	83	9	252	1,867
Madison Rural Sanitarium and Hospital.....	Gen	NPAssn	113	83	9	252	1,867
Marysville, 5,609—Blount	Gen	Indiv	40	..	..	..	No data supplied
Fort Craig Hospital.....	Gen	Indiv	40	..	..	..	No data supplied
Memphis, 292,942—Shelby	Gen	Church	480	467	20	1,396	16,729
Baptist Memorial Hosp. A.....	Gen	Church	480	467	20	1,396	16,729
Collins Chapel Connectional Hospital.....	Gen	Church	60	40	15	20	1,163
Crippled Children's Hospital School.....	Orth	NPAssn	40	32	..	..	107
Gartly-Ramsay Hospital.....	Gen	Corp	42	31	8	48	1,285
Hospital for Crippled Adults.....	Orth	NPAssn	66	41	..	..	374
John Gaston Hospital A.....	Gen	City	489	486	61	1,750	14,661
Memphis Eye, Ear, Nose and Throat Hospital.....	ENT	Church	55	25	..	..	2,225
Methodist Hospital A.....	Gen	Church	250	228	50	2,316	10,104
Psychiatric Hospital.....	Unit of Western State Hospital, Western State Hospital, Tenn.	..	256	221	69	1,450	9,746
St. Joseph Hospital A.....	Gen	Church	256	221	69	1,450	9,746
Turner-Gotten Sanatorium.....	N&M	Part	22	17	..	..	181
U. S. Marine Hospital.....	Gen	USPHS	130	104	..	..	1,905
U. S. Naval Air Station Dispensary.....	Gen	Navy	50	25	..	..	1,485
U. S. Naval Hospital.....	Gen	Navy	835	..	..	..	Estab. 1913
Veterans Admin. Facility.....	Gen	Vet	440	318	..	..	4,031
Wallace Sanitarium.....	N&M	Indiv	75	22	..	..	636
Willis C. Campbell Clinic Hospital.....	Orth	Part	60	53	..	..	1,255
Morristown, 8,050—Hamblen	Gen	Corp	25	5	5	122	249
Hamblen Hospital.....	Gen	Corp	25	5	5	122	249
Nabers Clinic.....	Gen	Indiv	20	7	6	122	750
Mountain Home, 250—Washington	Gen	Vet	553	334	..	..	2,516
Veterans Admin. Facility.....	Gen	Vet	553	334	..	..	2,516
Murfreesboro, 9,495—Rutherford	Gen	NPAssn	45	31	8	362	1,438
Rutherford Hospital.....	Gen	NPAssn	45	31	8	362	1,438
Veterans Admin. Facility.....	Ment	Vet	785	533	..	..	551
Nashville, 167,402—Davidson	Ment	State	2,054	1,911	..	..	391
Central State Hospital.....	Ment	State	2,054	1,911	..	..	391
City View Sanitarium.....	N&M	Indiv	50	20	..	..	353
Davidson County Hospital.....	Ment	County	797	707	4	17	801
Davidson County Tuberculosis Hospital.....	TB	County	300	214	..	..	328

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Geo. W. Hubbard Hospital of Meharry Medical College**	Gen	NPAasn	105	109	21	271	2,677
Hospital for the Criminal Insane	Unit of Central State Hospital						
Middle Tennessee Tuberculosis Hospital	TB	State	56	30	..	...	155
Nashville General Hosp.**	Gen	City	269	179	36	1,066	6,138
Protestant Hospital	Gen	NPAasn	101	93	18	863	4,895
Riverside Sanitarium and Hospital	Gen	Church	26	...	2	...	...
St. Thomas Hospital**	Gen	Church	195	167	30	1,487	7,053
Vanderbilt University Hospital**	Gen	NPAasn	333	198	58	1,051	6,384
Oakville, 163—Shelby	TB	CyCo	370	261	..	...	404
Oakville Memorial Sanatorium	TB	CyCo	370	261	..	...	404
Paris, 6,395—Henry	Gen	Indiv	24	9	4	84	461
McSwain Clinic	Gen	Part	30	18	7	164	1,088
Nobles Memorial Hospital...	Gen	Part	30	18	7	164	1,088
Pleasant Hill, 178—Cumberland	Gen	NPAssn	50	29	6	65	437
"Uplands" Cumberland Mountain Hospital and Sanatorium...	Gen	NPAssn	50	29	6	65	437
Pressmen's Home, 200—Hawkins	Gen	NPAssn	50	29	6	65	437
International Printing Pressmen and Assistants' Union Sanatorium	TB	NPAssn	40	29	..	...	10
Pulaski, 5,314—Giles	Gen	Indiv	23	10	3	100	705
Pulaski Hospital	Gen	Indiv	23	10	3	100	705
Raleigh, 450—Shelby	Gen	Indiv	23	10	3	100	705
Cheerfield Farm Preventorium	Unit of Oakville Memorial Sanatorium, Oakville						
Rockwood, 3,081—Roane	Gen	NPAssn	50	20	10	185	1,033
Chamberlain Memorial Hosp.	Gen	NPAssn	50	20	10	185	1,033
Rogersville, 2,018—Hawkins	Gen	Indiv	15	6	4	108	285
Lyons Hospital	Gen	Indiv	15	6	4	108	285
Seriverville, 1,161—Serier	Gen	Indiv	10	2	2	79	263
Broadway Hospital	Gen	Indiv	10	2	2	79	263
Sewanee, 1,600—Franklin	Gen	Indiv	10	2	2	79	263
Emerald-Hodgson Memorial Hospital	Gen	Church	25	13	10	94	911
Springfield, 6,668—Robertson	Gen	County	45	3	6	75	375
Robertson County Hospital...	Gen	County	45	3	6	75	375
Sweetwater, 2,583—Monroe	Gen	NPAssn	28	10	4	63	317
Sweetwater Hospital	Gen	NPAssn	28	10	4	63	317
Union City, 7,256—Obion	Gen	Corp	15	10	3	60	385
Union City Clinic	Gen	Corp	15	10	3	60	385
Western State Hospital, —Hardeman	Gen	State	2,600	2,209	..	..	692
Western State Hospital	Gen	State	2,600	2,209	..	..	692
Woodbury, 653—Cannon	Gen	Indiv	26	19	6	123	781
Good Samaritan Hospital	Gen	Indiv	26	19	6	123	781

Related Institutions

Chattanooga, 128,163—Hamilton	Gen	County	300	265	..	...	85
William L. Bork Memorial Hospital	Gen	County	300	265	..	...	85
Donelson, 1,500—Davidson	Gen	State	600	670	..	...	78
Tennessee Home and Training School for Feeble-minded Persons	Gen	State	600	670	..	...	78
Fayetteville, 4,684—Lincoln	Gen	County	32	23	6	264	1,147
Lincoln County Hospital	Gen	County	32	23	6	264	1,147
Knoxville, 111,560—Knox	Gen	State	20	2	..	...	378
Tennessee School for Deaf...	Inst	State	20	2	..	...	378
University of Tennessee Hospital	Inst	State	13	4	..	...	319
Mei D	Orth	Indiv	12	8	..	...	350
Shelby County Hospital	Inst	County	805	469	..	...	316
Nashville, 167,402—Davidson	Gen	NPAssn	36	35	..	...	98
Junior League Home for Crippled Children	Orth	NPAssn	36	35	..	...	98
Tennessee State Penitentiary Hospital	Inst	State	27	20	..	...	490
Shelbyville, 6,537—Bedford	Gen	NPAssn	40	34	8	149	1,622
Bedford County Hospital	Gen	NPAssn	40	34	8	149	1,622

TEXAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Ablene, 26,612—Taylor	Gen	State	1,394	1,369	..	...	177
Ablene State Hospital	Gen	State	1,394	1,369	..	...	177
Hendrick Memorial Hospital	Gen	Church	125	91	25	870	4,528
St. Ann Hospital	Gen	Church	30	20	14	458	1,120
Alice, 7,792—Jim Wells	Gen	Corp	30	15	8	225	800
Physicians and Surgeons Hospital	Gen	Corp	30	15	8	225	800
A	Gen	Indiv	10	...	No data supplied	...	...
A	Gen	Indiv	10	...	No data supplied	...	...
Archer County Tuberculosis Cottage	Gen	County	125	118	25	1,018	4,517
Archer County Tuberculosis Cottage	Gen	County	125	118	25	1,018	4,517
St. Anthony's Hospital	Gen	Unit of Northwest Texas Hospital	101	93	21	626	3,523
Veterans Admin. Facility	Gen	Church	156	102	..	...	926
Atlanta, 2,453—Cass	Gen	Vet	156	102	..	...	926
Ellington Memorial Hospital	Gen	Part	12	6	4	150	655
Austin, 87,930—Travis	Gen	State	2,810	2,770	..	...	613
Austin State Hospital	Gen	State	2,810	2,770	..	...	613

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Austin-Travis County Sanatorium	TB	CyCo	48	42	..	...	89
Brackenridge Hospital	Gen	City	225	124	35	982	4,296
Holy Cross Hospital	Gen	Church	22	12	6	99	428
St. David's Hospital	Gen	Church	60	45	12	308	2,838
Seton Hospital	Gen	Church	112	79	30	844	4,834
Baird, 1,810—Callahan	Gen	County	21	8	5	87	480
Callahan County Hospital	Gen	County	21	8	5	87	480
Bastrop, 1,976—Bastrop	Gen	NPAssn	14	6	3	115	513
F. A. Orgain Memorial Hosp.	Gen	NPAssn	14	6	3	115	513
Bay City, 6,594—Matagorda	Gen	County	45	15	12	362	429
Matagorda General Hospital	Gen	County	45	15	12	362	429
Beaumont, 59,061—Jefferson	Gen	Church	140	106	14	675	4,851
Hotel Dieu Hospital	Gen	Church	140	106	14	675	4,851
Jefferson County Tuberculosis Hospital	TB	County	115	84	..	...	103
Jefferson County Tuberculosis Hospital No. 2	TB	County	60	43	..	...	40
St. Therese Hospital	Gen	Church	90	63	25	914	3,774
Beeville, 6,789—Bee	Gen	Indiv	40	20	10	171	795
Beeville Hospital	Gen	Indiv	40	20	10	171	795
U. S. Naval Air Station Dispensary	Gen	Navy	70	...	..	...	...
Bellville, 1,347—Austin	Gen	Part	10	4	5	94	399
Bellville Hospital	Gen	Part	10	4	5	94	399
Big Spring, 12,604—Howard	Gen	Corp	35	19	6	208	1,192
Big Spring Hospital	Gen	Corp	35	19	6	208	1,192
Big Spring State Hospital	Gen	State	406	519	..	...	182
Cowper Clinic and Hospital	Gen	Indiv	11	7	5	153	426
Malone and Hogan Clinic-Hospital	Gen	Part	20	...	No data supplied	...	...
Blanco, 453—Blanco	Gen	Part	10	4	4	71	233
Hospital in the Hills	Gen	Part	10	4	4	71	233
Bonham, 6,349—Fannin	Gen	NPAssn	40	14	8	145	579
S. B. Allen Memorial Hosp.	Gen	NPAssn	40	14	8	145	579
Borger, 10,018—Hutchinson	Gen	NPAssn	12	...	3	Estab. 1913	...
Casa Serena Hospital	Gen	NPAssn	12	...	3	Estab. 1913	...
North Plains Hospital	Gen	County	36	25	8	428	1,442
Bowie, 3,470—Montague	Gen	Corp	15	9	5	107	371
Bowie Clinic Hospital	Gen	Corp	15	9	5	107	371
Brady, 5,002—McCulloch	Gen	Part	40	30	10	249	1,517
Brady Hospital	Gen	Part	40	30	10	249	1,517
Brenham, 6,435—Washington	Gen	Corp	20	8	5	93	514
Sarah B. Milroy Memorial Hospital	Gen	Corp	20	8	5	93	514
St. Francis Hospital	Gen	Church	25	9	6	70	585
Brownfield, 4,000—Terry	Gen	Part	22	12	6	170	768
Treadaway-Daniell Hospital	Gen	Part	22	12	6	170	768
Brownsville, 22,083—Cameron	Gen	Church	50	21	14	331	1,124
Mercy Hospital	Gen	Church	50	21	14	331	1,124
Station Hospital	Gen	Army	50	11	1	23	498
Brownwood, 13,398—Brown	Gen	NPAssn	33	...	No data supplied	...	...
Brownwood Memorial Hosp.	Gen	NPAssn	33	...	No data supplied	...	...
Medical Arts Hospital	Gen	NPAssn	36	18	6	120	1,226
Bryan, 11,842—Brazos	Gen	NPAssn	36	18	6	120	1,226
Bryan-College Medical Center	Gen	Indiv	21	13	7	259	1,175
Hospital	Gen	Indiv	21	13	7	259	1,175
St. Joseph Hospital	Gen	Church	25	14	8	249	886
Burnet, 1,945—Burnet	Gen	Part	18	10	6	120	1,076
Shepherd-Allen Hospital	Gen	Part	18	10	6	120	1,076
Burton, 350—Washington	Gen	Indiv	9	6	4	40	138
Burton Hospital	Gen	Indiv	9	6	4	40	138
Cameron, 5,040—Milam	Gen	Indiv	28	12	3	130	661
Cameron Hospital	Gen	Indiv	28	12	3	130	661
Newton Memorial Hospital	Gen	NPAssn	25	10	5	51	402
Canadian, 2,151—Hemphill	Gen	Indiv	8	3	3	78	217
Canadian Hospital	Gen	Indiv	8	3	3	78	217
Center, 3,010—Shelby	Gen	Indiv	18	9	3	76	740
Center Sanitarium	Gen	Indiv	18	9	3	76	740
Warren Hospital	Gen	Part	12	6	1	28	215
Childress, 6,464—Childress	Gen	Part	25	8	6	204	716
Jeter-Townsend Hospital	Gen	Part	25	8	6	204	716
Cisco, 4,868—Eastland	Gen	Indiv	22	5	4	35	685
Graham Sanitarium	Gen	Indiv	22	5	4	35	685
Clarksburg, 4,095—Red River	Gen	County	37	6	6	151	652
Red River County Hospital	Gen	County	37	6	6	151	652
Cleburne, 10,558—Johnson	Gen	Indiv	14	4	5	112	339
Cleburne Sanitarium	Gen	Indiv	14	4	5	112	339
Clifton, 1,732—Bosque	Gen	Part	10	5	4	106	368
Goodall and Witcher Clinic-Hospital	Gen	Part	10	5	4	106	368
Coleman, 6,034—Coleman	Gen	CyCo	50	15	4	224	978
Overall Memorial Hospital	Gen	CyCo	50	15	4	224	978
College Station, 2,184—Brazos	Gen	State	150	27	..	...	3,372
Agricultural and Mechanical College Hospital	Inst	State	150	27	..	...	3,372
Colorado City, 5,213—Mitchell	Gen	Indiv	14	7	8	101	533
C. L. Root Memorial Hospital	Gen	Indiv	14	7	8	101	533
Columbus, 2,422—Colorado	Gen	City	9	2	3	37	203
John F. Bell Memorial Hosp.	Gen	City	9	2	3	37	203
Commerce, 4,699—Hunt	Gen	Indiv	10	6	4	63	320
Allen Clinic-Hospital	Gen	Indiv	10	6	4	63	320
Leberman Hospital	Gen	Indiv	10	4	7	59	279
Conroe, 4,624—Montgomery	Gen	County	42	20	6	143	943
Montgomery County Hosp.	Gen	County	42	20	6	143	943
Corpus Christi, 57,301—Nueces	Gen	NPAssn	70	59	10	274	2,150
Fred Roberts Memorial Hospital	Gen	NPAssn	70	59	10	274	2,150

TEXAS—Continued

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Medical-Professional Hospital Gen	Corp		32	17	4	89	1,113
Spohn Hospital* Gen	Church		100	67	35	1,175	4,039
U. S. Naval Air Station Dispensary Gen	Navy		12	...	...	...	...
U. S. Naval Hospital* Gen	Navy		944	651	...	...	8,060
Corslenn, 15,232—Navarro							
Corslenn Hospital Gen	NPAesn		20	6	2	35	316
Navarro Clinic Hospital... Gen	Part		20	11	6	185	756
Physicians and Surgeons Hospital Gen	County		65	14	12	302	1,078
Crockett, 4,536—Houston							
Butler Memorial Hospital... Gen	Indiv		50	8	5	50	203
Jim Smith Memorial Hospital and Crockett Clinic... Gen	Part		18	5	3	71	1,668
Stokes-Dean Hosp. and Clinic Gen	Part		11	7	3	61	527
Crowell, 1,817—Foard							
Foard County Hospital... Gen	County		16	4	4	81	364
Crystal City, 6,529—Zuvala							
Crystal Hospital... Gen	Indiv		12	4	4	45	316
Cuero, 3,471—DeWitt							
Burns Hospital... Gen	Church		35	16	6	110	700
Lutheran Hospital... Gen	Part		35	10	5	42	613
Dalhart, 4,682—Dallam							
Loretto Hospital... Gen	Church		31	21	12	186	871
Dallas, 291,731—Dallas							
Baylor University Hosp.*+AO Gen	Church		426	350	65	2,907	16,111
Beverly Hills Sanitarium... N&M	Corp		30	30	...	...	224
Bradford Memorial Hospital for Babies... Unit of Children's Medical Center	Corp		25	20	...	...	65
Carman Sanatorium... TB	Corp		25	20	...	...	65
Children's Hospital... Unit of Children's Medical Center	Corp		25	20	...	...	65
Children's Medical Center*+A... Chil	NPAesn		105	55	5	...	1,845
Dallas Medical and Surgical Clinic Hospital* Gen	Part		27	20	...	...	1,576
Gaston Hospital* Gen	NPAesn		55	53	...	...	2,199
Medical Arts Hospital*+A... Gen	Corp		115	98	...	...	4,850
Methodist Hospital*+AO Gen	Church		176	142	30	1,172	7,387
Nightingale Lying-In Hospital Unit of Baylor University Hospital	CyCo		387	236	36	1,420	7,507
Parkland Hospital*+AO Gen	Indiv		18	15	4	42	419
Pinkston Clinic... Gen	Church		270	233	30	2,072	11,639
St. Paul's Hospital*+AO Gen	Church		270	233	30	2,072	11,639
Texas Scottish Rite Hospital for Crippled Children*+A... Orth	NPAesn		50	53	...	...	564
Timberlawn Sanitarium... Ment	Corp		50	53	...	...	218
U. S. Naval Air Station Dispensary Gen	Navy		125	35	...	...	1,451
Veterans Admin. Facility*+A... Gen	Vet		262	210	...	...	2,931
Woodlawn Hospital... TB	CyCo		125	102	...	...	203
Deatur, 2,578—Wise							
Deatur Clinic Hospital... Gen	Indiv		14	8	5	129	580
Rogers Hospital... Gen	Indiv		20	12	6	174	948
Denison, 15,581—Grayson							
Denison City Hospital... Gen	NPAesn		25	18	5	210	1,080
Long-Saced Clinic Hospital... Gen	Indiv		10	12	5	262	796
Missouri, Kansas, Texas Railroad Employees Hospital... Indus	NPAesn		65	30	...	...	702
Denton, 11,192—Denton							
Denton Hospital and Clinic... Gen	Indiv		35	22	7	256	1,259
Dublin, 2,516—Erath							
Guy Hospital... Gen	Indiv		13	4	3	200	428
Eagle Lake, 2,124—Colorado							
Laughlin Hospital... Gen	Indiv		13	8	5	...	377
East Bernard, 600—Wharton							
Albert Schuhmann Hospital... Gen	Indiv		10	6	4	86	312
Eden, 1,603—Concho							
Eden Clinic Hospital... Gen	Indiv		12	5	6	...	...
Edinburg, 8,718—Hidalgo							
Grandview Hospital... Gen	CyCo		42	18	8	126	917
El Campo, 3,006—Wharton							
Nightingale Hospital... Gen	County		65	18	12	181	825
Electra, 5,688—Wichita							
Electra Hospital... Gen	Indiv		25	5	7	107	313
Elgin, 2,008—Bastrop							
Fleming Hospital... Gen	Corp		20	8	7	122	610
El Paso, 96,810—El Paso							
El Paso City-County Hosp.*+A Gen	CyCo		102	90	19	329	2,973
El Paso Masonic Hospital... Gen	NPAesn		48	37	15	277	1,337
Hofel Dieu, Sisters' Hosp.*+O Gen	Church		132	96	38	1,303	3,881
Newark Conference Maternity Hospital... Mat	Church		20	7	14	317	321
Providence Hospital... Gen	Indiv		40	30	...	...	1,410
St. Joseph's Sanatorium... TB	Church		75	40	...	...	863
Southwestern General Hosp.*+A Gen	Corp		100	72	25	525	2,880
William Beaumont General Hospital*+A Gen	Army		700	409	7	83	5,919
Floresville, 1,708—Wilson							
Blake Hospital... Gen	Indiv		12	6	5	129	367
Oxford Hospital... Gen	Indiv		10	3	2	16	156
Floydada, 2,726—Floyd							
Floydada Hospital and Clinic Gen	Indiv		7	3	3	30	217
Fort Clark, —Kinney							
Station Hospital... Gen	Army		50	28	2	2	882
Fort Crockett, —Galveston							
Station Hospital... Gen	Army		46	26	...	...	924
Fort Worth, 177,662—Tarrant							
All Saints Episcopal Hosp.*+A Gen	Church		85	78	15	822	3,997
City and County Hosp.*+AO Gen	CyCo		106	92	20	639	3,763
W. I. Cook Memorial Hosp.*+A Gen	NPAesn		35	34	8	56	1,262

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Ethel Ransom Memorial Hospital Gen	Part		25	18	4	30	548
Fort Worth Children's Hosp. Chil	NPAesn		37	18	2	...	459
Harris Memorial Methodist Hospital*+AO Gen	Church		276	221	61	2,044	8,409
Pennsylvania Avenue Hosp... Gen	Indiv		75	45	15	150	2,020
St. Joseph's Hospital*+AO Gen	Church		204	147	31	1,315	7,631
U. S. Public Health Service Hospital*+A MentDrug	USPHS		1,052	851	...	...	1,687
Fredericksburg, 3,544—Gillespie							
Fredericksburg Hospital and Clinic Gen	Corp		12	6	4	149	459
Kelley Memorial Hospital and Clinic Gen	Indiv		12	6	4	64	297
Freeport, 2,570—Brazoria							
Freeport Hospital... Gen	NPAesn		19	14	6	279	1,020
Freer, 2,516—Duval							
Thomas-Spahn Hospital... Gen	Part		12	7	5	89	323
Gainesville, 9,651—Cooke							
Gainesville Sanitarium... Gen	NPAesn		50	13	10	175	1,013
Medical and Surgical Hospital Gen	Indiv		18	11	8	196	661
Galveston, 60,862—Galveston							
Hospital for Crippled and Deformed Children... Unit of John Sealy Hospital	State		484	410	20	1,019	8,923
John Sealy Hospital*+AO Gen	State		484	410	20	1,019	8,923
Negro Hospital... Unit of John Sealy Hospital	State		484	410	20	1,019	8,923
St. Mary's Infirmary*+AO Gen	Church		150	109	26	977	4,296
U. S. Marine Hospital*+A Gen	USPHS		210	160	...	...	2,514
Gatesville, 3,177—Coryell							
Coryell Memorial Hospital... Gen	County		29	5	8	184	1,257
Georgetown, 3,682—Williamson							
Martin Hospital... Gen	Indiv		20	7	4	160	289
Gilmer, 3,138—Upshur							
Oak Lawn Sanitarium... Gen	Part		12	6	3	95	423
Ragland Clinic-Hospital... Gen	Part		19	9	6	250	857
Gladewater, 4,451—Gregg							
Gladewater Hospital... Gen	Indiv		12	3	4	55	279
Hancock Clinic Hospital... Gen	Indiv		18	11	4	79	520
Gonzales, 4,722—Gonzales							
Holmes Hospital... Gen	Indiv		25	5	5	61	302
Goose Creek, 6,929—Harris							
Goose Creek Hospital... Gen	Corp		37	...	...	...	No data supplied
Lille and Duke Hospital... Gen	Part		25	12	6	228	741
Gorman, 1,157—Eastland							
Blackwell Sanitarium... Gen	Part		40	25	8	405	...
Graham, 5,175—Young							
Graham Hospital... Gen	NPAesn		18	10	5	221	810
Greenville, 13,995—Hunt							
Dr. E. P. Beeton's Hospital... Surg	Indiv		16	...	...	...	...
Goode and Phillips Hospital... Gen	Indiv		10	8	6	205	429
Dr. Joe Beeton's Hospital... Gen	Indiv		25	9	4	86	628
Groesbeck, 2,272—Limestone							
Dr. Cox's Hospital... Gen	Indiv		6	2	3	47	138
Hallettsville, 1,581—Lavaca							
Renner Hospital... Gen	Indiv		12	7	6	91	460
Harlingen, 13,306—Cameron							
Valley Baptist Hospital*+A... Gen	Church		42	27	10	260	1,260
Haskell, 3,051—Haskell							
Haskell County Hospital... Gen	County		25	12	6	165	641
Henderson, 6,437—Rusk							
Henderson Memorial Hospital Gen	NPAesn		40	18	8	144	1,040
Hereford, 2,584—Deaf Smith							
Deaf Smith County Hospital Gen	County		22	5	8	114	383
Hillsboro, 7,799—Hill							
Boyd Sanitarium... Gen	Indiv		23	9	6	138	550
Hitchcock, 1,000—Galveston							
U. S. Naval Air Station Dispensary Gen	Navy		28	...	...	...	Estab. 1943
Houston, 384,514—Harris							
Autry Memorial Hosp.-School Unit of Houston Tuberculosis Hospital	N&M		40	25	...	...	156
Dr. Greenwood's Sanitarium... N&M	Corp		50	26	13	280	2,500
Heights Clinic-Hospital... Gen	Corp		242	166	40	767	5,469
Hermann Hospital*+AO Gen	NPAesn		242	166	40	767	5,469
Houston Eye, Ear and Throat Hospital... ENT	NPAesn		23	10	...	...	1,214
Houston Negro Hospital... Gen	NPAesn		75	52	13	637	2,672
Houston Tuberculosis Hosp... TB	CyCo		172	102	...	...	311
Jefferson Davis Hospital*+AO Gen	CyCo		478	287	60	1,244	10,255
Memorial Hospital*+AO Gen	Church		275	238	34	1,884	10,672
Methodist Hospital*+AO Gen	Church		125	98	22	850	4,850
Montrose Clinic... N&M	Indiv		35	25	...	...	385
Park View Hospital... Gen	Corp		30	16	6	212	1,250
St. Joseph's Infirmary*+AO Gen	Church		358	312	90	5,019	17,249
Southern Pacific Hospital*+A Indus	NPAesn		120	71	...	...	2,200
Turner Urological Institute... Urol	Indiv		17	13	...	...	589
Wright Clinic and Hospital*+A Gen	Indiv		28	16	6	103	1,001
Jacksboro, 2,368—Jack							
Jacksboro Hospital... Gen	Part		12	...	...	...	No data supplied
Jacksonville, 7,213—Cherokee							
Nan Travis Memorial Hosp... Gen	NPAesn		83	45	9	190	2,540
Jasper, 3,497—Jasper							
Hardy-Hancock Hospital... Gen	Part		24	15	6	150	550
Richardson Hospital... Gen	Indiv		18	14	6	91	750
Kelly Field, —Bexar							
Station Hospital... Gen	Army		82	43	...	...	1,777
Kenedy, 2,891—Karnes							
Kenedy Clinic and Hospital... Gen	Corp		20	7	4	88	2,612

Key to symbols and abbreviations is on page 855

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Kermit, 2,584—Winkler Robinson-McClure Clinic Hospital	Gen	Part	12	6	4	132	528
Kerrville, 5,572—Kerr Kerrville General Hospital... Gen	NPAssn		20	8	4	93	473
Kerrville State Sanatorium... TB	State		185	173	..	..	381
Sunnyside Sanatorium	Indiv		20	16	..	..	44
Kilgore, 6,708—Gregg Kilgore Memorial Hospital... Gen	NPAssn		21	12	7	206	761
Kingsville, 7,782—Kleberg Kleberg County Hospital.... Gen	County		36	20	12	199	1,243
U. S. Naval Air Station Dispensary	Gen	Navy	50	..	..	..	..
Knox City, 1,127—Knox Knox County Hospital..... Gen	County		23	22	4	290	1,024
La Grange, 2,531—Fayette La Grange Hospital..... Gen	Corp		45	17	5	172	830
Lamesa, 6,035—Dawson Lamesa General Hospital.... Gen	Indiv		20	13	6	261	898
Price Hospital	Gen	Indiv	15	7	8	108	381
Lampasas, 3,426—Lampasas Rollins-Brook Hospital	Gen	Part	21	14	6	185	871
Laredo, 39,274—Webb Laredo Sanatorium	TB	NPAssn	25	16	..	..	30
Mercy Hospital	Gen	Church	75	30	10	555	1,888
Station Hospital	Gen	Army	37	6	1	4	177
La Tuna, 200—El Paso Federal Correctional Institution	Inst	USPHS	23	23	..	..	503
Legion, 200—Kerr Veterans Admin. Facility... Gen	TB Vet		405	342	..	..	1,129
Levelland, 3,091—Hockley Phillips-Dupre Hospital	Gen	Part	10	6	5	180	600
Liberty, 3,087—Liberty Mercy Hospital	Gen	Church	25	22	12	218	1,056
Littlefield, 3,517—Lamb Littlefield Hospital and Clinic Gen	Part		25	8	5	163	705
Payne-Shotwell Hospital and Clinic	Gen	Part	22	18	6	156	1,348
Livingston, 1,851—Polk Livingston Hospital	Gen	Indiv	15	9	2	159	696
Lockhart, 5,018—Caldwell Lockhart Sanitarium	Gen	NPAssn	20	7	3	33	186
Longview, 13,758—Gregg Hurst Eye, Ear, Nose and Throat Hospital	ENT	NPAssn	25	4	..	..	760
Markham Hospital	Gen	NPAssn	35	11	8	103	744
Lubbock, 31,633—Lubbock Lubbock General Hospital... Gen	Corp		85	67	15	324	5,154
St. Mary of the Plains Hospital	Gen	Church	40	24	12	357	1,852
West Texas Hospital... Gen	Corp		60	53	12	646	2,968
Lufkin, 9,567—Angelina Angelina County Hospital.... Gen	County		45	45	6	606	2,348
Luling, 4,437—Caldwell Luling Hospital	Gen	Part	12	10	5	104	365
Marfa, 3,805—Presidio Station Hospital	Gen	Army	46	17	2	19	464
Marlin, 6,542—Falls Buie-Allen Hospital	Gen	Indiv	38	25	3	50	750
Buie Clinic and Marlin Sanitarium Bath House and Hilton Hotel	Unit of Buie-Allen Hospital						
Torbett Clinic and Hospital, Gen	Corp		52	26	5	72	1,499
Marshall, 18,410—Harrison Kahn Memorial Hospital... Gen	NPAssn		35	13	7	337	1,126
Texas and Pacific Railway Employees Hospital	Indus	NPAssn	105	51	..	..	2,192
McAllen, 11,877—Hidalgo McAllen Municipal Hospital... Gen	City		65	34	16	295	1,540
McKinney, 8,555—Collin McKinney City Hospital... Gen	City		65	27	10	440	1,438
Memphis, 3,860—Hall Memphis Hospital	Gen	Indiv	15	5	3	12	212
Odom-Goodall Hospital	Gen	Part	14	7	5	102	818
Mercedes, 7,624—Hidalgo Mercedes General Hospital... Gen	NPAssn		22	7	6	119	479
Meridian, 1,016—Bosque Holt Hospital and Clinic... Gen	Indiv		7	4	4	97	285
Mexia, 6,410—Limestone Brown Memorial Hospital... Gen	Corp		20	11	3	50	540
Midland, 9,352—Midland Western Clinic Hospital	Gen	Indiv	35	8	10	271	689
Mineral Wells, 6,303—Palo Pinto Nazareth Hospital... Gen	Church		40	19	10	257	1,239
Nacogdoches, 7,532—Nacogdoches City Memorial Hospital... Gen	City		54	35	8	239	2,301
Navesota, 6,138—Grimes Brazos Valley Sanitarium... Gen	Corp		24	12	4	161	846
N... .. Gen	Indiv		20	14	5	64	645
N... .. Gen							
Texas Gulf Sulphur Company Hospital	Gen	NPAssn	10	5	3	70	442
Odessa, 9,573—Ector Headlee Hospital	Gen	Indiv	22	9	10	163	730
Wood Hospital	Gen	Part	12	8	6	180	615
Olney, 3,497—Young Hamilton Hospital	Gen	City	23	12	6	151	607

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Orange, 7,472—Orange Frances Ann Lutecher Hosp... Gen	NPAssn		29	25	7	666	1,919
Paducah, 2,677—Cottle W. Q. Richards Memorial Hospital	Gen	Indiv	20	..	..	..	No data supplied
Palestine, 12,144—Anderson Missouri Pacific Lines Employees' Hospital	Indus	NPAssn	75	35	..	..	1,054
Palestine Sanitarium	Gen	Corp	23	9	10	191	648
Pampa, 12,805—Gray Worley Hospital	Gen	Indiv	44	31	11	357	2,034
Paris, 18,678—Lamar Geo. Griffiths Memorial Hospital for Children.....	Unit of Sanitarium of Paris						
Lamar County Hospital... Gen	County		50	20	7	81	687
St. Joseph's Hospital... Gen	Church		83	25	15	403	1,432
Sanitarium of Paris... Gen	Corp		80	72	12	233	2,452
Pasadena, 3,436—Harris Pasadena Hospital and Clinic Gen	Part		24	18	13	356	1,943
Pearsall, 3,164—Frio Dr. J. E. Beall Hospital... Gen	Indiv		10	2	2	27	104
Goodnight Clinic Hospital... Gen	Indiv		10	4	2	59	349
Pecos, 4,855—Reeves Camp and Camp Hospital... Gen	Indiv		20	8	4	93	426
Phillips, 4,000—Hutchinson Pantex Hospital	Gen	NPAssn	12	5	4	110	355
Pittsburg, 2,916—Camp Pittsburg Medical and Surgical Hospital	Gen	Corp	20	9	6	104	544
Plainview, 8,263—Hale Plainview Sanit. and Clinic... Gen	Part		86	30	12	312	3,285
Port Arthur, 46,140—Jefferson St. Mary's Hospital Gates Memorial... Gen	Church		175	100	28	1,348	5,214
Prairie View (Hempstead P.O.), 140—Waller Prairie View State College Hospital... Gen	State		50	37	4	36	802
Quanah, 3,767—Hardeman Memorial Hospital	Gen	County	50	23	10	192	1,536
Ranger, 4,553—Eastland City-County Hospital	Gen	CyCo	32	20	6	134	904
West Texas Hospital... Gen	Corp		18	13	3	101	460
Refugio, 4,077—Refugio Refugio County Hospital... Gen	Church		45	11	6	78	607
Rio Grande City, 2,283—Starr Station Hospital	Gen	Army	30	7	2	12	268
Robstown, 6,780—Nueces Robstown Hospital	Gen	NPAssn	14	11	4	94	830
Roscoe, 1,166—Nolan Young Hospital	Gen	Indiv	25	16	7	148	1,151
Rosenberg, 3,457—Fort Bend Fort Bend Hospital... Gen	Part		41	21	5	110	547
Rotan, 2,029—Fisher Callan Hospital	Gen	Part	31	18	5	210	1,095
Rusk, 5,699—Cherokee Rusk State Hospital... Gen	Ment	State	2,539	2,174	..	..	755
San Angelo, 25,802—Tom Green Clinic-Hospital... Gen	Corp		40	29	12	332	2,263
St. John's Hospital... Gen	Church		25	18	6	133	1,054
Shannon West Texas Memorial Hospital... Gen	NPAssn		100	76	15	707	4,312
San Antonio, 253,854—Bexar Brooke General Hospital... Gen	Army		1,200	656	23	352	11,250
Central Clinic Hospital... Gen	Indiv		10	6	4	60	265
Grace Lutheran Sanatorium for Tuberculosis	TB	Church	36	30	..	..	121
Medical and Surgical Memorial Hospital... Gen	NPAssn		140	121	22	1,138	7,007
Medical Arts Hospital... Gen	Corp		28	22	5	80	1,835
Dr. Moody's Sanitarium... N&M	Corp		60	28	..	..	60
Nix Hospital... Gen	Corp		145	114	36	769	5,160
Physicians and Surgeons Hospital... Gen	Corp		65	63	14	536	3,398
Robert B. Green Memorial Hospital... Gen	County		250	145	20	991	4,357
Saez Clinic	Gen	Indiv	10	7	6	106	233
San Antonio State Hospital... Ment	State		2,757	2,855	..	..	609
Santa Rosa Hospital... Gen	Church		329	272	48	2,099	13,672
Station Hosp. (Brooks Field) Gen	Army		35	11	..	..	946
Woodmen of the World War Memorial Hospital... TB	NPAssn		150	76	..	..	121
Sanatorium, 1,475—Tom Green State Tuberculosis Sanat... TB	State		955	771	..	..	1,703
San Marcos, 6,006—Hays Soldiers' and Sailors' Memorial Hospital	Gen	NPAssn	13	8	2	156	540
Santa Anna, 1,661—Coleman Sealy Hospital... Gen	Part		29	9	3	71	428
Sealy, 2,500—Austin Sealy Hospital	Gen	Part	9	4	2	86	379
Seguin, 7,006—Guadalupe Seguin Hospital	Gen	NPAssn	22	10	4	140	600
Seminole, 1,761—Gaines Gaines County General Hosp. Gen	County		24	..	8	Estab. 1943	
Seymour, 3,325—Baylor Baylor County Hospital... Gen	County		18	7	5	146	559

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Shamrock, 3,124—Wheeler							
St. Mary's Hospital.....	Gen	Church	24	9	7	158	674
Shamrock General Hospital..	Gen	Indiv	25	4	3	...	125
Sherman, 17,116—Grayson							
St. Vincent's Hospital.....	Gen	Church	60	42	10	320	2,345
Wilson N. Jones Hospital... Gen		NPAssn	73	51	13	298	2,688
Shiner, 1,520—Lavaca							
Dr. Wagner's Hospital.....	Gen	Indiv	17	10	1	94	464
Slaton, 3,587—Lubbock							
Mersey Hospital	Gen	Church	50	30	0	246	690
Snyder, 3,815—Scurry							
Snyder General Hospital.....	Gen	Corp	24	...	No data supplied		
Spur, 2,136—Dickens							
Nichols Sanitarium	Gen	Indiv	20	8	6	62	262
Stamford, 4,810—Jones							
Stamford Sanitarium	Gen	Part	50	30	10	331	1,592
Stephenville, 4,768—Trath							
Stephenville Hospital	Gen	NPAssn	36	31	7	222	1,775
Sugar Land, 2,400—Fort Bend							
Laura Eldridge Hospital ... Gen		NPAssn	25	21	4	156	1,067
Sulphur Springs, 6,742—Hopkins							
Corad Clinic and Hospital... Gen		Indiv	12	8	5	107	987
Taylor, 7,855—Williamson							
Stromberg Clinic and Hosp. Gen		Corp	25	19	8	150	788
Wedemeyer Hospital	Gen	Corp	10	25	6	167	862
Treague, 3,137—Frostburg							
Davidson Memorial Hospital. Gen		Indiv	20	8	5	141	534
Temple, 15,311—Bell							
Gulf, Colorado and Santa Fe							
Hospital.....	Indus	NPAssn	150	42	...	...	1,847
Kings Daughters Hospital... Gen		NPAssn	110	51	15	371	2,168
Scott and White Hosp. ... Gen		Corp	200	142	15	565	4,844
Terrell, 10,451—Kaufman							
Alexander Hospital	Gen	Indiv	25	8	4	18	711
Fiddell Hospital	Gen	Indiv	11	2	2	48	332
Holton-Johnston Clinic Hosp. Gen		Part	12	6	1	69	448
Lane Clinic-Hospital	Gen	Indiv	10	1	3	13	153
Terrell State Hospital.....	Ment	State	2,794	2,610	...	...	428
Texarkana, 17,019—Bowie							
Federal Correctional Institu-							
tion	Inst	Fed	34	12	...	...	107
Texarkana Hospital.....	Gen	NPAssn	50	45	8	364	2,180
Texas City, 5,718—Galveston							
Beeler-Manske Clinic Hospital Gen		Part	10	6	7	242	350
Danforth Clinic Hospital....	Gen	Indiv	14	5	7	79	334
Tyler, 28,279—Smith							
Bryant Clinic and Sanatorium Gen		Part	15	14	5	126	1,067
Mother Frances Hospital... Gen		Church	61	27	18	411	1,634
Uvalde, 6,639—Uvalde							
Merritt Hospital	Gen	Indiv	12	4	6	100	1,100
Velasco, 1,006—Brazoria							
Dow Magnesium Corporation							
Hospital	Gen	NPAssn	62	42	13	385	2,900
Vernon, 9,277—Wilbarger							
Christ the King Hospital....	Gen	Church	25	10	4	113	615
Moore Hospital and Clinic... Gen		Part	16	7	5	83	532
Vernon Sanitarium	Gen	Indiv	21	11	8	277	712
Victoria, 11,126—Victoria							
De Tar Memorial Hospital... Gen		Indiv	37	26	6	342	1,747
Victoria Hospital	Gen	Indiv	26	19	13	235	860
Waco, 55,922—McLennan							
Hillcrest Memorial Hosp. ... Gen		Church	75	51	15	624	2,565
Joanna McClelland Memorial							
Hospital	Gen	City	50	20	20	268	1,173
Providence Hospital... Gen		Church	159	96	24	791	4,651
Veterans Admin. Facility... Ment		Vet	1,322	1,219	...	...	749
Waxahatchee, 8,655—Ellis							
Waxahatchee Sanitarium... Gen		NPAssn	31	16	5	147	781
Weatherford, 5,924—Parker							
Medical and Surgical Clinic.. Gen		Indiv	10	8	4	112	432
Wellington, 3,308—Collingsworth							
St. Joseph's Hospital.....	Gen	Church	16	8	6	177	685
Wharton, 4,386—Wharton							
Caney Valley Hospital.....	Gen	Corp	23	2	8	110	611
Wheeler, 848—Wheeler							
Wheeler Hospital	Gen	Part	24	6	6	160	588
Wichita Falls, 45,112—Wichita							
Bethania Hospital.....	Gen	Church	51	31	16	512	1,668
Wichita Falls Clinic-Hosp. ... Gen		Part	80	65	10	305	3,596
Wichita Falls State Hospital Ment		State	2,379	2,435	...	...	504
Wichita General Hospital... Gen		CyCo	130	79	15	717	4,035
Yonkum, 4,733—Lavaca							
Huth Memorial Hospital....	Gen	Church	30	13	10	80	600

Related Institutions

Almeda, 300—Harris							
Keightley Hospital	N&M	Indiv	40	10	...	...	48
Arlington, 1,240—Tarrant							
Knight Templar Hospital... Inst		NPAssn	25	14	...	...	126
Austin, 87,940—Travis							
Austin State School.....	McDe	State	2,013	1,850	...	...	446
Dallas, 201,734—Dallas							
Good Samaritan Hospital... Gen		Part	30	20	17	667	860
Danils, 7,087—Ellis							
Danils Municipal Hospital... Gen		City	20	8	4	300	730
Fort Worth, 177,162—Tarrant							
Elmwood Sanatorium	TB	CyCo	68	62	...	...	50
Harmon Clinic and Hospital Gen		Indiv	40	26	6	126	1,560
Howard Sanitarium	N&M	Indiv	16	11	...	...	43

TEXAS—Continued

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Hallettsville, 1,531—Lavaca							
Dulner Hospital	Gen	Indiv	7	4	2	16	100
Huntsville, 5,108—Walker							
Texas State Prison Hospital. Inst		State	140	93	...	...	1,191
Hutchins, 400—Dallas							
City-County Convalescent Hos-							
pital	ConvInst	CyCo	140	120	...	...	77
McCanney, 2,595—Upton							
Cooper Hospital	Gen	Indiv	8	4	4	60	230
Mount Vernon, 1,413—Franklin							
Crutcher Hospital	Gen	NPAssn	10	2	2	49	65
Poteet, 2,317—Atascosa							
Shotts Memorial Hospital.... Gen		Indiv	7	2	2	82	128
San Antonio, 253,531—Bexar							
Salvation Army Home and							
Hospital	Mat	Church	35	2	18	61	90
Southton, 89—Bexar							
Bexar County Tuberculosis							
Hospital	TB	County	75	70	...	...	103
Texon, 1,260—Bexar							
Texon Hospital	Gen	NPAssn	11	4	4	12	950
Waco, 55,922—McLennan							
Waco State Home Hospital... Inst		State	30	15	...	...	65

UTAH

Hospitals and Sanatoriums

American Fork, 3,333—Utah							
American Fork Community							
Hospital	Gen	City	20	12	16	279	571
Bingham Canyon, 2,834—Salt Lake							
Bingham Canyon Hospital... Gen		Indiv	40	24	7	103	781
Brigham, 5,611—Box Elder							
Cooley Memorial Hospital... Gen		NPAssn	35	21	15	356	1,337
Cedar City, 4,493—Iron							
Iron County Hospital.....	Gen	County	40	28	18	355	1,145
Conville, 919—Summit							
Summit County Hospital....	Gen	County	13	6	6	112	256
Fort Douglas, 1,071—Salt Lake							
Station Hospital	Gen	Army	70	54	...	...	894
Fort Duchesne, 164—Uintah							
Uintah and Ouray Agency							
Indian Hospital	Gen	IA	32	13	7	45	336
Heber, 2,745—Wasatch							
Heber Hospital	Gen	Part	14	10	10	127	294
Lehi, 2,733—Utah							
Lehi Municipal Hospital....	Gen	City	15	8	12	155	253
Logan, 11,863—Cache							
Cache Valley General Hosp... Gen		NPAssn	50	21	16	354	1,153
William Budge Memorial Hos-							
pital... Gen		NPAssn	75	64	22	537	4,830
Mojab, 1,084—Grand							
Grand County Public Hosp... Gen		County	17	...	No data supplied	...	...
Ogden, 43,688—Weber							
Thomas D. Dee Memorial Hos-							
pital... Gen		Church	201	163	59	2,405	7,793
Utah State Tuberculosis Sana-							
torium... TB		State	100	70	...	...	123
Park City, 3,739—Summit							
Park City Miners' Hospital... Gen		NPAssn	20	14	6	86	523
Payson, 3,591—Utah							
Payson City Hospital.....	Gen	NPAssn	26	25	18	372	908
Price, 3,211—Carbon							
Price City Hospital.....	Gen	City	56	35	12	477	1,310
Provo, 15,071—Utah							
Utah State Hospital.....	Ment	State	1,165	1,078	...	...	882
Utah Valley Hospital... Gen		NPAssn	55	33	24	849	2,074
Richfield, 3,584—Sevier							
Sevier Valley Hospital.....	Gen	Indiv	20	8	12	200	417
St. George, 3,591—Washington							
D. A. McGregor Hospital....	Gen	NPAssn	29	13	8	188	832
Salt Lake, 1,616—Sevier							
Salt Lake Hospital	Gen	Indiv	17	7	6	84	257
Salt Lake City, 149,934—Salt Lake							
Dr. W. H. Groves Latter-Day							
Saints Hospital... Gen		Church	365	317	69	3,099	12,267
Holy Cross Hospital... Gen		Church	200	159	74	2,343	6,469
Primary Children's Hospital. Chl		Church	25	12	...	...	49
St. Mark's Hospital... Gen		Church	150	142	14	472	4,411
Salt Lake County General Hos-							
pital... Gen		County	193	144	25	308	3,660
Shriners Hospital for Crippled							
Children	Orth	NPAssn	20	20	...	...	58
Veterans Admin. Facility... Gen		Vet	153	142	...	...	1,261
Spanish Fork, 4,167—Utah							
Hughes Memorial Hospital... Gen		Indiv	12	5	5	105	337
Tremonton, 1,443—Box Elder							
Valley Hospital	Gen	NPAssn	20	9	12	180	600

Related Institutions

American Fork, 3,333—Utah							
Utah State Training School. McDe		State	900	532	...	...	51
Murray, 5,740—Salt Lake							
Cottonwood Stake Maternity							
Hospital	Mat	Church	30	22	30	968	978

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Businets	Number of Births	Admis- sions †
Dante, 2,700—Russell							
Clinchfield Hospital	Gen	NPAssn	25	19	2	9	663
Danville, 32,749—Pittsylvania							
Hilltop Sanatorium	TB	NPAssn	50	50	...	...	7,757
Memorial Hospital°	Gen	NPAssn	170	135	26	862	7,255
Farmville, 3,475—Prince Edward							
Southside Community Hosp.▲	Gen	NPAssn	55	39	16	372	1,863
Fort Belvoir, —Fairfax							
Station Hospital	Gen	Army	50	31	..	...	1,177
Fort Monroe, 1,265—Elizabeth City							
Station Hospital▲	Gen	Army	136	67	4	43	2,103
Fort Myer, 1,050—Arlington							
Station Hospital	Gen	Army	139	61	..	...	1,036
Franklin, 3,466—Southampton							
Raiford Memorial Hospital... Gen		NPAssn	35	27	6	127	1,206
Fredericksburg, 10,666—Spotsylvania							
Mary Washington Hospital... Gen		NPAssn	75	69	10	420	2,522
Front Royal, 3,831—Warren							
Front Royal Community Hos- pital	Gen	NPAssn	25	13	4	66	652
Gordonsville, 508—Orange							
Gordonsville Community Hos- pital	Gen	Part	12	4	3	27	93
Grundy, 1,476—Buchanan							
Grundy Hospital	Gen	Corp	50	46	6	76	1,976
Hampton, 5,892—Elizabeth City							
Dixie Hospital▲°	Gen	NPAssn	90	90	12	633	3,201
Harrisonburg, 8,768—Rockingham							
Rockingham Memorial Hosp.° Gen		NPAssn	150	166	20	631	5,064
Hopewell, 8,619—Prince George							
John Randolph Hospital..... Gen		NPAssn	22	12	6	223	541
Hot Springs, 1,600—Bath							
Community House	Gen	NPAssn	14	5	5	36	165
Keecoughtan, 1,900—Elizabeth City							
Veterans Admin. Facility▲... Gen		Vet	534	307	..	...	2,499
Langley Field, —Elizabeth City							
Station Hospital+	Gen	Army	125	61	5	99	2,690
Lebanon, 622—Russell							
Lebanon General Hospital... Gen		Indiv	20	12	5	75	886
Leesburg, 1,698—Loudoun							
Loudoun County Hospital... Gen		County	32	20	7	180	897
Lexington, 3,914—Rockridge							
Stonewall Jackson Memorial Hospital	Gen	NPAssn	57	30	8	147	1,636
Lorton, 70—Fairfax							
District of Columbia Reform- atory	See Washington, D. C.						
Louisia, 365—Louisa							
Louisa Hospital	Gen	Indiv	10	...	7	Estab.	1913
Luray, 1,511—Page							
Page Memorial Hospital..... Gen		NPAssn	25	8	10	97	774
Lynchburg, 44,541—Campbell							
Guggenheimer Children's Hos- pital	Unit of Marshall Lodge Memorial Hospital						
Lynchburg General Hosp.▲°... Gen	City		150	112	30	625	3,750
Marshall Lodge Memorial Hos- pital▲	Gen	NPAssn	120	79	15	238	2,690
Virginia Baptist Hospital▲°... Gen	Church		100	60	24	570	2,383
Marion, 5,177—Smyth							
Lee Memorial Hospital..... Gen		NPAssn	30	35	4	84	1,671
Southwestern State Hospital, Ment	State		1,347	1,270	..	...	334
Martinsville, 10,080—Henry							
Henry County Memorial Hos- pital	Gen	Indiv	25	14	7	32	516
Shackelford Hospital	Gen	Indiv	50	38	10	242	1,913
Nassawadox, 250—Northampton							
Northampton-Accomac Memo- rial Hospital	Gen	NPAssn	52	46	10	203	1,758
Naval Operating Base (Norfolk P.O.), U. S. Naval Hospital▲..... Gen	—Norfolk	Navy	1,400	1,315	20	480	13,379
Newport News, 37,667—Warwick							
Elizabeth Buxton Hosp.▲▲°... Gen	Indiv		146	116	35	1,652	6,329
Riverside Hospital▲°	Gen	NPAssn	203	112	30	1,237	5,578
Whittaker Memorial Hosp.▲ Gen		NPAssn	53	29	24	227	1,336
Norfolk, 144,332—Norfolk							
Grandy Sanatorium	TB	City	150	136	..	...	182
Hospital of St. Vincent de Paul▲°	Gen	Church	220	184	25	1,156	7,512
Leigh Memorial Hospital▲... Gen		NPAssn	72	56	22	644	2,493
McCoy-Stokes Hospital	ENT	Part	11	4	..	...	518
Norfolk Community Hosp.▲ Gen		NPAssn	136	61	36	393	1,773
Norfolk General Hosp.▲▲°... Gen		NPAssn	341	2.9	55	1,687	9,563
U. S. Marine Hospital▲... Gen		USPHS	360	274	..	...	3,869
U. S. Naval Air Station Dis- pensary	Gen	Navy	192	174	...	...	0,977
Norton, 4,006—Wise							
Dr. Botts' Eye, Ear, Nose and Throat Hospital	ENT	Indiv	30	4	..	...	1,183
Norton General Hospital..... Gen		Indiv	40	16	6	35	631
Pennington Gap, 1,990—Lee							
..... Gen	Gen	Corp	32	25	2	56	1,133
P							
Federal Reformatory Hosp... Inst	Ment	State	2,374	3,885	10	3	777
Medical Center Hospital..... Unit of Central State Hospital		USPHS	46	24	...	...	710
Petersburg Hospital▲°	Gen	NPAssn	80	97	14	627	3,401
Petersburg State Colony..... MeDe		State	300	279	...	...	461
Portsmouth, 50,745—Norfolk							
Kings Daughters Hospital▲° Gen		NPAssn	100	121	16	976	4,264
Norfolk Naval Hospital▲... Gen		Navy	3,010	1,909	37	751	37,537
Parrish Memorial Hospital▲° Gen		Corp	57	63	17	743	3,797

Hospitals and Sanatoriums

Abingdon, 3,158—Washington									
George Ben Johnston Memorial Hospital	Gen	NP Assn	60	47	5	80	1,338		
Alexandria, 33,523—Arlington	Gen	NP Assn	102	91	28	1,237	4,474		
.....	Gen	Corp	21	12	5	104	676		
Kings Mountain Memorial Hospital	Gen	NP Assn	47	49	10	629	2,968		
Brook Hill, 100—Henrico									
Pine Camp Hospital	See Richmond, Virginia								
Burkeville, 658—Nottoway									
Piedmont Sanatorium	TB	State	270	253	..	...	296		
.....	TB	State	400	364	..	...	458		
.....	TB	State	370	336	..	...	510		
.....	Gen	NP Assn	50	34	10	254	1,397		
University of Virginia Hospital	Gen	State	525	567	46	932	10,970		
.....	Corp		26	17	8	371	1,811		
.....	Gen	NP Assn	133	102	8	139	4,225		
Clintwood, 1,100—Dickenson	Gen	Indiv	20	12	8	176	832		
Dickenson County Hospital	Gen	Part	25	13	4	67	585		
Coeburn, 764—Wise	Gen								
Coeburn Hospital	Gen								
Corington, 6,300—Alleghany	Gen	Indiv	27	14	10	113	554		
Corington General Hospital	Gen								

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Pulaski, 8,792—Pulaski							
Pulaski Hospital	Gen	Corp	65	51	12	380	2,405
Quantico, 1,139—Prince William							
U. S. Naval Hospital	Gen	Navy	379	108	..	..	2,770
Radford, 6,999—Montgomery							
Radford Community Hosp.	Gen	NPAasn	68	21	11	281	1,495
St. Albans Sanatorium	N&M	Indlv	46	42	..	..	481
Richlands, 2,203—Tazewell							
Clinch Valley Clinic Hosp.	Gen	Corp	101	69	10	242	2,916
Mattie Williams Hospital	Gen	Part	75	41	8	105	1,623
Richmond, 193,042—Henrico							
Crippled Children's Hosp.	Orth	NPAasn	120	90	..	..	273
Dooley Hospital	Unit of Med. College of Va., Hosp. Division						
Grace Hospital	Gen	Corp	85	73	20	657	4,131
Johnston-Willis Hospital	Gen	Corp	132	139	22	829	5,645
Medical College of Virginia, Hospital Division	Gen	State	881	520	91	1,718	13,953
Memorial Hospital	Unit of Med. College of Va., Hosp. Division						
Penitentiary Hospital	Inst	State	40	32	..	..	931
Pino Camp Hospital	TB	City	275	205	..	..	213
Retreat for the Sick	Gen	NPAasn	90	71	20	900	3,320
Richmond Community Hosp.	Gen	NPAasn	32	..	No data supplied	..	..
St. Elizabeth's Hospital	Gen	Corp	55	50	..	1	1,438
St. Luke's Hospital	Gen	Corp	81	77	20	455	2,919
St. Philip Hospital	Unit of Med. College of Va., Hosp. Division						
Sheltering Arms Hospital	Gen	NPAasn	86	46	17	211	972
Stuart Circle Hospital	Gen	Corp	96	89	24	460	2,929
Tucker Hospital	N&M	Corp	59	27	..	..	598
Westbrook Sanatorium	N&M	Corp	125	91	..	..	325
Roanoke, 69,287—Roanoke							
Burrell Memorial Hospital	Gen	NPAasn	41	22	4	157	791
Gill Memorial Eye, Ear and Throat Hospital	ENT	NPAasn	25	5	..	..	911
Jefferson Hospital	Gen	NPAasn	126	99	22	671	3,119
Lewis-Gale Hospital	Gen	NPAasn	132	112	15	472	4,284
Roanoke City Tuberculosis Sanatorium	TB	City	69	43	..	..	40
Roanoke Hospital	Gen	NPAasn	97	59	13	558	2,759
Shenandoah Hospital	Gen	Corp	50	26	8	332	1,745
Veterans Admin. Facility	Ment	Vet	1,448	1,171	..	..	769
Roanoke, 2,650—Smyth							
Thaleson Hospital	Gen	NPAasn	17	9	5	50	371
South Boston, 5,252—Hullfax							
South Boston Hospital	Gen	Corp	43	26	8	168	1,060
Union, 13,337—Augusta							
De Jarnette Sanatorium	Unit of Western State Hospital						
Kings Daughters Hospital	Gen	NPAasn	72	48	10	318	1,705
Western State Hospital	Ment	State	2,426	2,370	..	..	741
Stonegap, 1,650—Wise							
Stonegap Hospital	Indlv	NPAasn	18	4	..	..	106
Stuart, 720—Patrick							
Stuart Hospital	Gen	Indlv	25	12	5	35	654
Suffolk, 11,545—Nansemond							
Lakeview Hospital	Gen	Corp	65	40	15	206	1,459
Virginia General Hospital	Gen	NPAasn	25	10	6	112	465
University, —Albemarle							
University of Virginia Hosp.	See Charlottesville, Virginia						
Waynesboro, 7,573—Augusta							
Waynesboro Community Hospital	Gen	NPAasn	35	17	10	218	860
Williamsburg, 3,942—James City							
Bell Hospital	Gen	Indlv	19	9	5	130	510
Eastern State Hospital	Ment	State	1,793	1,832	..	..	491
Winchester, 12,955—Frederick							
Winchester Memorial Hosp.	Gen	NPAasn	150	107	25	680	3,633
Woodstock, 1,546—Shenandoah							
Corn Miller Memorial Hosp.	Gen	Indlv	32	14	6	82	535

Related Institutions

Beaumont, —Powhatan							
Virginia Industrial School for Boys	Inst	State	21	5	..	..	352
Colony, 100—Amherst							
Lynchburg State Colony	MeDe	State	1,619	1,659	..	..	163
Medical Center Hospital	Unit of Lynchburg State Colony						
Falls Church, 2,576—Fairfax							
Gundry Home and Training School for Feeble-minded	MeDe	Indlv	75	68	..	..	10
Lawrenceville, 1,703—Brunswick							
Louise Taylor Letcher Memorial Hospital	Inst	Church	18	2	..	..	170
Martinsville, 10,080—Henry							
St. Mary Hospital	Gen	Indlv	12	11	2	87	702
Richmond, 193,042—Henrico							
City Home	GenInst	City	500	419	50	83	1,057
State Farm, 75—Gooseland							
State Farm Hospital	Inst	State	120	68	..	..	486
Sweet Briar, 200—Amherst							
Sweet Briar College Infirmary	Inst	NPAasn	15	3	..	..	286

WASHINGTON

Hospitals and Sanatoriums

Aberdeen, 18,846—Grays Harbor							
St. Joseph's Hospital	Gen	Church	81	68	24	685	2,495
American Lake, 800—Pierce							
Veterans Admin. Facility	Ment	Vet	676	661	..	..	228
Annacortes, 5,875—Skagit							
Annacortes Hospital	Gen	Corp	21	17	5	155	747
Auburn, 4,211—King							
Suburban Hospital	Gen	Corp	40	23	15	228	1,040

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bellingham, 29,314—Whatcom							
St. Francis Hospital	Gen	Indlv	20	19	4	56	304
St. Joseph's Hospital	Gen	Church	112	87	18	625	2,646
St. Luke's General Hosp.	Gen	NPAasn	70	70	12	472	3,236
Whatcom County Hospital	Gen	County	86	58	5	18	446
Bremerton, 15,134—Kitsap							
Franklin Delano Roosevelt Hospital	Gen	NPAasn	150	..	35	Estab. 1943	..
U. S. Naval Hospital	Gen	Navy	662	521	14	212	7,032
Chehalis, 4,857—Lewis							
St. Helen's Hospital	Gen	Church	40	26	13	378	1,316
Chevelah, 1,565—Stevens							
St. Joseph's Hospital	Gen	Church	30	16	11	142	602
Colfax, 2,853—Whitman							
St. Ignatius Hospital	Gen	Church	61	41	11	196	2,349
Colville, 2,418—Stevens							
Mount Carmel Hospital	Gen	Church	32	25	10	130	950
Dayton, 3,026—Columbia							
John Brining Memorial Hosp.	Gen	Indlv	20	17	4	93	579
Ellensburg, 5,944—Kittitas							
Ellensburg General Hospital	Gen	NPAasn	25	15	10	128	748
Kittitas County Hospital	Gen	County	43	31	7	23	436
Valley General Hospital	Gen	Indlv	16	10	6	165	498
Elma, 1,370—Grays Harbor							
Elma General Hospital	Gen	Indlv	20	9	6	100	490
Oakhurst Sanatorium	TB	County	110	72	..	..	75
Everett, 30,221—Snohomish							
General Hospital	Gen	NPAasn	99	83	29	778	5,229
Providence Hospital	Gen	Church	140	84	28	668	4,222
Forks, 600—Challam							
Olympic Hospital	Gen	Indlv	30	8	3	29	449
Fort Lewis, —Pierce							
Station Hospital	Gen	Army	432	131	8	118	3,208
Fort Steilacoom, 2,080—Pierce							
Western State Hospital	Ment	State	3,005	2,767	..	..	889
Fort Worden (Port Townsend P.O.)	—Jefferson						
Station Hospital	Gen	Army	45	12	2	10	171
Kirkland, 2,084—King							
Kirkland Hospital	Gen	Indlv	15	11	12	311	554
Lakeview, 200—Pierce							
Mountain View Sanatorium	TB	County	110	110	..	..	117
Longview, 12,355—Cowlitz							
Cowlitz General Hospital	Gen	NPAasn	80	64	20	709	2,880
St. John's Memorial Hospital	Gen	Church	60	..	..	Reorganized	..
Mason City, 1,400—Okanogan							
Coulee Dam Community Hosp.	Gen	Part	30	19	10	51	555
Medical Lake, 2,114—Spokane							
Eastern State Hospital	Ment	State	2,209	2,043	..	..	614
Monroe, 1,590—Snohomish							
Valley View Hospital	Gen	County	72	60	6	14	519
Mount Vernon, 4,278—Skagit							
Mount Vernon General Hosp.	Gen	NPAasn	25	22	5	..	1,200
Rowley General Hospital	Gen	Indlv	42	29	8	183	1,192
Nespelem, 360—Okanogan							
Colville Indian Hospital	Gen	IA	36	22	5	52	515
Newport, 1,174—Pend Oreille							
Newport Community Hosp.	Gen	NPAasn	20	15	8	152	422
Olympia, 13,251—Thurston							
St. Peter's Hospital	Gen	Church	100	76	15	676	3,322
Pasco, 3,912—Franklin							
Our Lady of Lourdes Hospital	Gen	Church	56	50	16	286	2,015
U. S. Naval Air Station Dispensary	Gen	Navy	129	..	..	..	..
Port Angeles, 9,469—Challam							
Davidson and Hay Hospital	Gen	Indlv	46	30	12	151	1,655
Port Angeles General Hosp.	Gen	NPAasn	120	57	10	177	1,942
Port Gamble, 500—Kitsap							
Port Gamble General Hosp.	Gen	Indlv	18	9	8	141	490
Port Townsend, 4,683—Jefferson							
St. John's Hospital	Gen	Church	130	40	15	243	1,352
Puyallup, 7,859—Pierce							
Puget Sound Sanatorium	N&M	Indlv	19	13	..	..	109
Puyallup General Hospital	Gen	Part	40	19	12	293	1,200
Renton, 4,488—King							
Bronson Memorial Hospital	Gen	Indlv	33	16	9	276	781
Richmond Highlands, 600—King							
Firland Sanatorium and Isolation Hospital	TB Iso	City	300	146	..	..	178
Seattle, 368,302—King							
Ballard General Hospital	Gen	NPAasn	35	26	12	250	1,388
Children's Orthopedic Hospital	Orth	NPAasn	125	113	..	..	1,289
Cobb Hospital	Surg	Indlv	23	12	..	..	2,840
Columbus Hospital	Gen	Church	200	146	46	1,546	6,397
Columbia Sanatorium	See Richmond Highlands, Wash.						
Firland Sanatorium	N&M	Corp	25	20	..	..	50
Firland Sanatorium							
King County Hospital, Unit No. 1 (Harborview)	Gen	County	454	421	51	486	11,521
King County Hospital, Unit No. 2 (Georgetown)	Chr	County	275	263	..	..	845
King County Tuberculosis Hospital	TB	County	216	183	..	..	161
Laurel Beach Sanatorium	TB	Part	90	89	..	..	170
Maynard Hospital	Gen	NPAasn	100	91	40	2,100	3,747
Medical and Dental Building							
Surgery	Surg	Indlv	20	17	..	..	2,749
Providence Hospital	Gen	Church	361	372	73	2,337	15,858
Riverton Hospital for Chest Diseases	TB	NPAasn	90	89	..	..	103
Seattle General Hospital	Gen	NPAasn	110	113	36	1,078	4,643
Station Hospital	Gen	Army	20	2	..	..	175
Swedish Hospital	Gen	NPAasn	300	274	74	2,368	9,729
U. S. Marine Hospital	Gen	USPHS	400	333	..	..	3,477

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
U. S. Naval Air Station Dispensary	Gen	Navy	70	...	...	...	...
U. S. Naval Air Station Dispensary (Whidbey Island)	Gen	Navy	110	35	...	2,819	...
U. S. Naval Hospital*	Gen	Navy	1,780	876	...	7,200	...
University of Washington Health Service	Inst	State	75	11	...	919	...
Virginia Mason Hospital*+	Gen	NPAasn	165	150	35	1,102	6,231
Sedro Woolley, 2,954—Skagit	Gen	NPAasn	35	19	7	167	830
Memorial Hospital	Gen	State	2,178	2,136	...	...	568
Northern State Hospital*+	Ment	State	54	35	12	208	1,723
Shelton, 3,707—Mason	Gen	NPAasn	54	35	12	208	1,723
Shelton General Hospital*	Gen	NPAasn	54	35	12	208	1,723
Snohomish, 2,794—Snohomish	Gen	NPAasn	54	35	12	208	1,723
Aldercrest Sanatorium	TB	County	58	49	...	...	46
Snohomish General Hospital, Gen	Gen	Indiv	16	9	5	167	413
Snoqualmie Falls, —King	Gen	Indiv	25	10	6	86	382
Snoqualmie Falls Hospital*	Gen	Indiv	25	10	6	86	382
Spokane, 122,001—Spokane	Gen	Church	200	175	44	1,291	7,931
Deaconess Hospital*+	Gen	Church	200	175	44	1,291	7,931
Edgemoor Sanatorium	TB	County	142	95	...	...	153
Sacred Heart Hospital*+	Gen	Church	350	331	63	1,905	10,389
St. Luke's Hospital*+	Gen	NPAasn	207	148	29	521	4,699
Salvation Army Women's Hospital and Home	Mat	Church	42	26	25	99	118
Shriners Hospital for Crippled Children*	Orth	NPAasn	24	20	...	...	86
Station Hospital*+	Gen	Army	56	45	...	...	883
Stellacoom, 832—Pierce	Gen	USPHS	81	60	...	...	553
Tacoma, 109,408—Pierce	Inst	USPHS	81	60	...	...	553
Northern Pacific Beneficial Association Hospital*	Gen	NPAasn	111	66	9	52	2,446
Pierce County Hospital*	Gen	County	215	137	21	124	2,768
St. Joseph's Hospital*+	Gen	Church	279	183	73	2,104	8,317
Tacoma General Hosp.*+	Gen	NPAasn	213	209	70	2,550	8,631
Tacoma Indian Hospital*	TB	Gen IA	337	192	19	...	1,165
Toppenish, 3,683—Yakima	TB	IA	37	28	...	...	36
Yakima Sanatorium	TB	IA	37	28	...	...	36
Vancouver, 18,789—Clark	Gen	County	82	43	...	...	725
Clark County Hospital	Gen	County	82	43	...	...	725
Clark General Hospital	Gen	NPAasn	52	44	13	304	1,912
Northern Permanente Foundation*	Gen	NPAasn	330	175	50	118	5,613
St. Joseph's Hospital	Gen	Church	123	102	35	1,165	4,430
Station Hospital	Gen	Army	132	63	4	37	1,563
Walla Walla, 18,100—Walla Walla	Gen	Church	90	61	15	371	2,914
St. Mary's Hospital*	Gen	Church	90	61	15	371	2,914
Veterans Admin. Facility*	Gen	Vet	421	349	...	...	1,202
Walla Walla General Hosp.*	Gen	Church	53	44	14	309	1,532
Wenatchee, 11,620—Chelan	Gen	Church	65	53	20	490	1,812
Central Washington Deaconess Hospital*	Gen	Church	65	53	20	490	1,812
St. Anthony's Hospital*	Gen	Church	65	53	20	490	1,812
Yakima, 27,221—Yakima	Gen	Church	170	166	30	1,228	6,437
St. Elizabeth's Hospital*	Gen	Church	170	166	30	1,228	6,437
Yakima County Hospital	Gen	County	150	63	10	43	1,054

Related Institutions

Cle Elum, 2,230—Kittitas	Gen	NPAasn	24	14	...	10	684
Roslyn Cle Elum Beneficial Company Hospital	Gen	NPAasn	24	14	...	10	684
Ione, 631—Pend Oreille	Gen	Indiv	10	6	4	28	231
Ione Hospital	Gen	Indiv	10	6	4	28	231
Medical Lake, 2,114—Spokane	Gen	State	1,447	1,326	...	...	67
Part	Part	Part	11	11	...	...	30
Corp	Corp	Corp	22	18	...	...	712
Spokane, 122,001—Spokane	Gen	City	90	6	...	...	150
Rivercrest Hospital	Iso	City	90	6	...	...	150
Tacoma, 109,408—Pierce	Gen	NPAasn	21	17	...	...	2,397
Washington Minor Hospital	Gen	NPAasn	21	15	10	85	87
White Shield Home	Mat	NPAasn	21	15	10	85	87
Tulalip, 100—Snohomish	Gen	IA	9	7	3	91	255
Tulalip Hospital	Gen	IA	9	7	3	91	255
Walla Walla, 18,100—Walla Walla	Gen	County	40	28	...	...	36
Blue Mountain Sanatorium	TB	County	40	28	...	...	36
Washington State Penitentiary Hospital	Inst	State	60	41	...	...	565
Gen	Gen	Indiv	17	5	4	67	206
Dopps Sanatorium	TB	Part	45	34	...	...	24

WEST VIRGINIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Alderson, 1,493—Monroe	Gen	Inst	45	35	8	13	1,059
Federal Reformatory for Women	Inst	USPHS	45	35	8	13	1,059
B	Inst	USPHS	45	35	8	13	1,059
Beckley, 12,852—Raleigh	Gen	MeDe	305	300	...	...	51
Beckley Hospital	Gen	Part	160	123	15	198	5,484
Pinnerest Sanatorium*	TB	State	665	524	...	...	792
Raleigh General Hospital*	Gen	Corp	90	65	7	136	2,261

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Bluefield, 20,641—Mercer	Gen	Corp	160	96	20	242	4,500
Bluefield Sanatorium*	Gen	Indiv	45	12	3	16	615
Brown's Hospital	Gen	Indiv	25	13	4	14	467
St. Luke's Hospital	Gen	Corp	75	50	10	162	2,050
Buckhannon, 4,450—Upshur	Gen	Church	44	21	8	131	887
St. Joseph's Hospital*	Gen	Church	44	21	8	131	887
Charleston, 67,014—Kanawha	Gen	NPAasn	350	237	30	893	10,280
Charleston General Hosp.*+	Gen	NPAasn	350	237	30	893	10,280
Kanawha Valley Hospital*+	Gen	Corp	150	99	15	409	4,414
McMillan Hospital*+	Gen	Corp	100	62	20	486	3,165
Mountain State Memorial Hospital	Gen	NPAasn	88	72	10	381	3,795
St. Francis Hospital*+	Gen	Church	100	101	18	785	4,115
Salvation Army Hospital	Gen	Church	28	12	8	161	609
Staats Hospital	Gen	Corp	56	39	6	141	1,923
Charles Town, 2,920—Jefferson	Gen	NPAasn	25	13	8	108	507
Charles Town General Hosp.	Gen	NPAasn	25	13	8	108	507
Clarksburg, 30,579—Harrison	Gen	Church	177	110	15	412	4,201
St. Mary's Hospital*+	Gen	Church	177	110	15	412	4,201
Union Protestant Hospital*	Gen	NPAasn	54	40	14	478	1,910
Denmar, 100—Pocahontas	TB	State	100	110	...	...	124
Denmar Sanatorium	TB	State	100	110	...	...	124
East Rainelle, 1,515—Greenbrier	Gen	Corp	35	16	4	88	637
East Rainelle General Hosp.	Gen	Corp	35	16	4	88	637
Elkins, 8,133—Randolph	Gen	NPAasn	108	56	11	47	2,329
Davis Memorial Hospital*	Gen	NPAasn	108	56	11	47	2,329
Elkins City Hospital*	Gen	Corp	66	35	10	132	1,156
Fairmont, 23,105—Marion	Gen	State	60	51	5	117	1,451
Fairmont Emergency Hosp.*	Gen	State	60	51	5	117	1,451
Fairmont General Hospital*	Gen	City	145	103	18	590	4,807
Glen Dale, 1,348—Marshall	Gen	Church	80	42	10	384	2,064
Reynolds Memorial Hosp.*	Gen	Church	80	42	10	384	2,064
Hinton, 5,815—Summers	Gen	Corp	60	39	8	78	1,393
Hinton Hospital*	Gen	Corp	60	39	8	78	1,393
Holden, 3,600—Logan	Gen	Corp	35	17	2	28	903
Holden Hospital	Gen	Corp	35	17	2	28	903
Hopewell, 475—Preston	Unit of Hopewell Sanitarium	State	475	460	...	...	438
Conley Hospital	Unit of Hopewell Sanitarium	State	475	460	...	...	438
Hopewell Sanitarium*+	TB	State	475	460	...	...	438
Huntington, 78,836—Cabell	Gen	NPAasn	165	122	20	91	3,173
Chesapeake and Ohio Hospital*+	Gen	NPAasn	165	122	20	91	3,173
Huntington Memorial Hosp.*	Gen	NPAasn	130	85	22	310	4,076
Huntington Orthopedic Hosp.	Orth	NPAasn	50	54	...	...	498
Huntington State Hospital	Ment	State	956	941	...	...	513
St. Mary's Hospital*+	Gen	Church	228	200	36	1,442	7,194
Veterans Admin. Facility*	Gen	Vet	321	166	...	...	2,128
Keyser, 6,177—Mineral	Gen	Corp	50	36	12	189	1,274
Potomac Valley Hospital*	Gen	Corp	50	36	12	189	1,274
Kingwood, 1,616—Preston	Gen	Corp	10	7	5	62	418
Kerecheval Memorial Clinic	Gen	Corp	10	7	5	62	418
Lakin, 50—Mason	Gen	State	410	383	...	...	96
Lakin State Hospital	Ment	State	410	383	...	...	96
Logan, 5,166—Logan	Gen	Corp	100	41	16	122	2,401
Logan General Hospital*	Gen	Corp	100	41	16	122	2,401
Mercy Hospital	Gen	Corp	75	36	6	51	1,555
Marlinton, 1,644—Pocahontas	Gen	County	25	10	5	80	495
Pocahontas Memorial Hosp.	Gen	County	25	10	5	80	495
Martinsburg, 15,063—Berkeley	Gen	NPAasn	75	45	10	...	1,262
City Hospital	Gen	NPAasn	96	64	12	302	1,652
Kings Daughters Hospital*	Gen	NPAasn	96	64	12	302	1,652
Matawan, 905—Mingo	Gen	Corp	52	15	3	16	925
Matawan Clinic Hospital	Gen	Corp	52	15	3	16	925
Milton, 1,641—Cabell	Orth	Conv	123	70	...	...	50
Morris Memorial Hosp.	Orth	Conv	123	70	...	...	50
Montgomery, 3,231—Fayette	Gen	Part	127	85	8	146	3,864
Laird Memorial Hosp.*+	Gen	Part	127	85	8	146	3,864
Gen	Gen	Indiv	125	59	23	445	4,000
Gen	Gen	County	100	78	23	472	2,475
New Martinsville, 3,491—Wetzel	Gen	Indiv	25	10	2	35	543
Wetzel County Hospital	Gen	NPAasn	30	18	7	120	1,103
Oak Hill, 3,213—Fayette	Gen	Indiv	75	55	7	86	2,208
Oak Hill Hospital	Gen	Indiv	75	55	7	86	2,208
Parkersburg, 30,103—Wood	Gen	City	165	112	18	646	3,778
Camden-Clark Memorial Hospital*	Gen	City	123	94	25	475	3,063
St. Joseph's Hospital*+	Gen	Church	123	94	25	475	3,063
Parsons, 2,077—Tucker	Gen	Corp	25	12	7	61	623
Tucker County Hospital	Gen	Corp	25	12	7	61	623
Philippi, 1,955—Barbour	Gen	Part	50	30	6	119	1,593
Myers Clinic Hospital	Gen	Part	50	30	6	119	1,593
Princeton, 7,426—Mercer	Gen	Corp	70	29	12	191	1,505
Mercer Memorial Hospital	Gen	Corp	70	29	12	191	1,505
Richwood, 5,051—Nicholas	Gen	Indiv	50	10	4	40	263
McClung Hospital	Gen	Indiv	50	10	4	40	263
Sacred Heart Hospital	Gen	Church	30	10	5	69	561
Ronceverte, 2,565—Greenbrier	Gen	Corp	50	22	3	37	1,196
Greenbrier Valley Hospital*	Gen	Corp	50	22	3	37	1,196
South Charleston, 10,377—Kanawha	Gen	Indiv	50	15	12	164	943
Dunn Hospital	Gen	Indiv	50	15	12	164	943
Spencer, 2,492—Roane	Gen	Indiv	20	11	6	74	537
Do Poe Hospital	Gen	Indiv	20	11	6	74	537
Spencer State Hospital	Ment	State	900	900	...	...	371
Triadelphia, 350—Ohio	Gen	County	33	36	...	...	27
Ohio County Tuberculosis Sanatorium	TB	County	33	36	...	...	27

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Welch, 6,264—McDowell							
Grace Hospital.....	Gen	Corp	165	110	0	204	4,701
Stevens Clinic Hospital.....	Gen	Corp	130	96	10	157	5,111
Welch Emergency Hospital.....	Gen	State	97	35	4	47	1,231
Weston, 8,268—Lewis							
General Hospital.....	Gen	Indiv	44	19	5	104	976
Weston City Hospital.....	Gen	Corp	35	13	7	99	720
Weston State Hospital.....	Ment	State	1,960	1,741	..	..	610
Wheeling, 61,000—Ohio							
Ohio Valley General Hosp.★▲	Gen	NPAssn	300	213	30	1,072	8,079
Wheeling Hospital★▲	Gen	Church	225	161	30	903	4,570
Williamson, 5,266—Mingo							
Williamson Memorial Hosp.▲	Gen	Indiv	110	79	7	234	4,217
Related Institutions							
Berkeley Springs, 1,145—Morgan							
"The Pines" West Virginia							
Foundation for Crippled							
Children.....	Orth	NPAssn	40	21	..	..	23
Charleston, 67,911—Kanawha							
Hill Crest Sanatorium.....	TbChil	NPAssn	52	41	..	..	54
Moundsville, 14,168—Marshall							
Grand View Sanatorium.....	TB	County	26	16	..	..	25
West Virginia Penitentiary							
Hospital.....	Inst	State	65	50	..	..	515
St. Mary's, 2,201—Pleasant							
West Virginia Training School MeDe		State	40	No data supplied			

WISCONSIN

Hospitals and Sanatoriums

Adams, 1,310—Adams							
Adams-Friendship Hospital... Gen	Indiv		10	4	2	47	139
Algoma, 2,452—Kewaunee							
Algoma Hospital..... Gen	NPAssn		10	8	4	95	350
Amery, 1,461—Polk							
Amery Hospital..... Gen	NPAssn		18	12	5	55	411
Aro, 9,495—Langlade							
Langlade County Memorial							
Hospital..... Gen	Church		52	47	12	124	1,511
Appleton, 28,456—Outagamie							
St. Elizabeth Hospital★▲..... Gen	Church		170	120	45	1,273	5,686
Arcadia, 1,830—Trempealeau							
St. Joseph's Hospital..... Gen	Church		22	12	6	123	635
Ashland, 11,101—Ashland							
Ashland General Hospital..... Gen	NPAssn		67	38	8	121	1,206
St. Joseph's Hospital★▲..... Gen	Church		135	82	15	353	2,967
Baldwin, 918—St. Croix							
Baldwin Community Hospital Gen	NPAssn		16	11	6	167	507
Baraboo, 6,415—Sauk							
St. Mary's Rindling Hospital Gen	Church		57	42	15	161	2,181
Bayfield, 1,212—Bayfield							
Purcell Sanatorium..... TB	County		70	60	..	..	85
Beaver Dam, 10,456—Dodge							
Lutheran Deaconess Hospital Gen	Church		47	40	8	268	1,308
St. Joseph's Hospital..... Gen	Church		60	36	14	236	1,488
Beloit, 25,454—Rock							
Beloit Municipal Hospital... Gen	City		98	95	30	903	3,586
Berlin, 4,247—Green Lake							
Berlin Memorial Hospital... Gen	NPAssn		29	19	13	208	918
Black River Falls, 2,559—Jackson							
Krohn Clinic and Hospital... Gen	Part		29	21	10	291	696
Boscobel, 2,448—Grant							
Brookside-Parker Hospital .. Gen	Part		20	6	8	46	262
Burlington, 4,144—Racine							
Burlington Memorial Hosp.▲ Gen	NPAssn		35	23	10	272	895
Chippewa Falls, 10,368—Chippewa							
Northern Wisconsin Colony							
and Training School..... MeDe	State		1,129	1,552	5	11	257
St. Joseph's Hospital..... Gen	Church		115	96	10	128	2,923
Columbus, 2,762—Columbia							
St. Mary's Hospital..... Gen	Church		40	25	12	196	1,013
Cumberland, 1,539—Barron							
Cumberland Hospital..... Gen	Part		22	7	4	100	345
Darlington, 2,462—Lafayette							
McConnell-McGheane Hospital Gen	Part		11	No data supplied			
Dodgeville, 2,269—Iowa							
Dodgeville General Hospital... Gen	NPAssn		23	17	5	120	672
St. Joseph's Hospital..... Gen	Church		51	40	15	207	1,151
Eau Claire, 30,745—Eau Claire							
Luther Hospital★▲..... Gen	NPAssn		116	113	30	607	4,377
Mt. Washington Sanatorium▲ TB	County		91	91	..	..	72
Sacred Heart Hospital..... Gen	Church		144	129	26	385	3,852
Edgerton, 3,266—Rock							
Edgerton Memorial Hospital Gen	NPAssn		30	18	12	210	835
Elkhorn, 2,382—Walworth							
Walworth County Hospital... Gen	County		75	45	21	112	1,816
Fond du Lac, 27,269—Fond du Lac							
St. Agnes Hospital★▲..... Gen	Church		273	238	52	1,075	7,558
Fort Atkinson, 6,135—Jefferson							
Fort Atkinson Memorial							
Hospital..... Gen	NPAssn		18	10	8	199	663
Frederic, 725—Polk							
Frederic Hospital..... Gen	Indiv		12	11	4	131	597
Grantsburg, 874—Burnett							
Community Hospital..... Gen	NPAssn		32	18	5	68	642
Green Bay, 46,245—Brown							
Bella Memorial Hospital... Gen	Church		97	75	22	597	3,134
St. Mary's Hospital... Gen	Church		103	67	22	529	4,673
St. Vincent's Hospital..... Gen	Church		225	212	25	972	7,733

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Hartford, 3,910—Washington							
St. Joseph's Hospital..... Gen	Church		50	32	8	231	1,054
Hawthorne, 75—Douglas							
Middle River Sanatorium▲... TB	County		142	125	..	..	100
Hayward, 1,571—Sawyer							
Hayward Indian Hospital... Gen	IA		59	27	9	102	671
Hillsboro, 1,146—Vernon							
Hansberry Hospital..... Gen	Indiv		25	12	5	82	511
Iola, 716—Waupaca							
Iola Hospital..... Gen	Corp		20	10	5	59	379
Janesville, 22,602—Rock							
Mercy Hospital★▲..... Gen	Church		120	88	25	610	2,806
Pinehurst Sanatorium▲..... TB	County		75	65	..	..	171
Jefferson, 3,659—Jefferson							
Forest Lawn Sanatorium..... TB	County		58	52	..	..	70
Kaukauna, 7,882—Outagamie							
Riverview Sanatorium▲..... TB	County		65	47	..	..	103
Kenosha, 47,765—Kenosha							
Kenosha Hospital..... Gen	NPAssn		150	97	30	719	3,601
St. Catherine's Hospital..... Gen	Church		70	48	24	590	2,260
Willowbrook Sanatorium▲ .. TB	County		71	46	..	..	44
Keshena, 560—Shawano							
St. Joseph's Indian Hospital Gen	NPAssn		63	38	9	120	952
La Crosse, 12,767—La Crosse							
Grandview Hospital..... Gen	NPAssn		106	40	10	160	1,248
La Crosse Hospital..... Gen	NPAssn		36	24	8	124	1,000
La Crosse Lutheran Hosp.★▲ Gen	Church		120	92	9	235	3,427
St. Ann's Hospital..... Unit of St. Francis Hospital							
St. Francis Hospital★▲..... Gen	Church		275	225	40	1,058	7,650
Ladysmith, 3,671—Rusk							
St. Mary's Hospital..... Gen	Church		35	33	8	312	1,401
Lancaster, 2,963—Grant							
Lancaster General Hospital... Gen	Part		12	No data supplied			
Laona, 1,800—Forest							
Ovitz Hospital..... Gen	Indiv		14	6	4	76	225
Madison, 67,447—Dane							
Lake View Sanatorium▲..... TB	County		145	142	..	..	100
Madison General Hospital★▲ Gen	NPAssn		200	154	34	913	6,472
Methodist Hospital★▲..... Gen	Church		110	88	17	356	3,911
Morningside Sanatorium▲ .. TB	NPAssn		52	47	..	..	35
St. Mary's Hospital★▲..... Gen	Church		175	169	50	1,394	7,065
State of Wisconsin General Hospital★▲..... Gen	State		750	558	22	219	13,393
Wisconsin Orthopedic Hospital for Children..... Unit of State of Wisconsin General Hosp.							
Wisconsin Psychiatric Institute..... Unit of State of Wisconsin General Hosp.							
Manitowoc, 24,461—Manitowoc							
Holy Family Hospital★▲..... Gen	Church		145	130	32	895	4,872
Marinette, 14,183—Marinette							
Marinette General Hospital... Gen	County		80	50	22	429	2,402
Marshfield, 10,359—Wood							
St. Joseph's Hospital★▲..... Gen	Church		198	155	18	589	4,700
Mauston, 2,621—Juneau							
Mauston Hospital..... Gen	Corp		45	23	10	199	935
Medford, 2,361—Taylor							
Medford Clinic..... Gen	Corp		38	22	6	175	993
Mendota, 400—Dane							
Mendota State Hospital..... Ment	State		800	791	4	5	1,025
Veterans Admin. Facility★▲... Ment	Vet		334	314	..	..	132
Menomonie, 6,582—Dunn							
Menomonie City Hospital... Gen	City		28	28	7	200	840
Merrill, 8,711—Lincoln							
Holy Cross Hospital★▲..... Gen	Church		50	36	11	315	1,378
Lincoln County Hospital..... Gen	County		25	15	4	7	105
Milwaukee, 587,472—Milwaukee							
Blue Mound Preventorium... Unit of Muirdale Sanatorium							
Columbia Hospital★▲..... Gen	NPAssn		135	121	35	938	4,446
Evangelical Deaconess Hospital★▲..... Gen	Church		140	111	30	1,168	5,567
Johnston Emergency Hosp.▲ Emer	City		25	8	4	3	2,561
Milwaukee Children's Hospital★▲..... Chil	NPAssn		150	108	..	..	3,741
Milwaukee County Asylum for Chronic Insane..... Ment	County		1,588	1,793	..	..	369
Milwaukee County Hosp.★▲..... Gen	County		715	471	75	321	9,852
Milwaukee County Hospital for Mental Diseases★▲..... Ment	County		1,071	1,023	..	..	561
Milwaukee Hospital★▲..... Gen	Church		279	260	69	1,773	6,982
Milwaukee Sanatorium..... See Waawatosa							
Misericordia Hospital★▲..... Gen	Church		112	106	30	1,253	4,297
Mount Sinai Hospital★▲..... Gen	NPAssn		165	148	30	1,394	7,046
Muirdale Sanatorium★▲..... TB	County		540	514	..	..	541
Sacred Heart Sanatorium★▲..... Gen	Church		250	183	..	..	2,183
St. Anthony Hospital..... Gen	Church		52	51	24	1,035	2,875
St. Joseph's Hospital★▲..... Gen	Church		325	241	85	2,845	11,779
St. Luke's Hospital★▲..... Gen	Church		100	87	30	1,225	4,686
St. Mary's Hill Sanatorium... N&M	Church		101	76	..	..	522
St. Mary's Hospital★▲..... Gen	Church		210	165	40	1,822	6,447
St. Michael Hospital★..... Gen	Church		142	93	30	623	5,009
Shorewood Hospital-Sanatorium..... N&M	Corp		50	42	..	..	291
South View Hospital..... Iso	City		250	79	..	..	1,684
Stark Hospital..... Unit of Milwaukee Children's Hospital							
Veterans Admin. Facility★▲... GenTb Vet			1,178	886	..	..	4,409
West Si..... Gen	NPAssn		35	28	14	334	1,691
Mondovi..... Gen	Indiv		20	10	6	93	350

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Monroe, 6,182—Green	Gen	Church	70	51	18	468	2,494
St. Clare Hospital.....	Gen	Church	70	51	18	468	2,494
Neeah, 10,645—Winnebago	Gen	Church	70	51	18	468	2,494
Theda Clark Memorial Hos- pital.....	Gen	NPAasn	55	57	17	568	2,348
New London, 4,825—Waupaca	Gen	Church	40	28	14	326	1,107
Community Hospital.....	Gen	NPAasn	13	7	6	38	218
New London Memorial Hosp. Gen	Gen	NPAasn	54	48	1	106	106
Oconomowoc, 4,562—Waukesha	Gen	Corp	40	40	6	88	530
Rogers Memorial Sanitarium. N&M	Gen	Corp	40	40	6	88	530
Summit Hospital.....	Gen	Corp	40	40	6	88	530
Oconto Falls, 1,888—Oconto	Gen	City	20	9	6	114	358
Oconto Falls Hospital.....	Gen	City	20	9	6	114	358
Onalaska, 1,742—La Crosse	Gen	County	65	58	1	100	100
Oak Forest Sanatorium.....	TB	County	65	58	1	100	100
Oscola, 642—Polk	Gen	Indiv	11	8	3	68	378
Ladd Memorial Hospital.....	Gen	Indiv	11	8	3	68	378
Oshkosh, 39,089—Winnebago	Gen	Church	195	146	30	763	5,193
Mercy Hospital.....	Gen	Church	195	146	30	763	5,193
Park Falls, 3,252—Price	Gen	Indiv	25	13	4	130	632
Park Falls Hospital.....	Gen	Indiv	25	13	4	130	632
Pewaukee, 1,352—Waukesha	Gen	County	41	39	1	50	50
Oak Sanatorium.....	TB	County	41	39	1	50	50
Platteville, 4,763—Grant	Gen	Indiv	16	5	4	27	200
Andrew Hospital.....	Gen	Indiv	16	5	4	27	200
Wilson Cunningham Hospital Gen	Gen	Part	25	7	6	42	231
Plum City, 363—Pierce	Gen	Indiv	16	11	5	73	328
Plum City Hospital.....	Gen	Indiv	16	11	5	73	328
Plymouth, 4,170—Sheboygan	Gen	Church	42	20	13	172	630
Plymouth Hospital.....	Gen	Church	42	20	13	172	630
Rocky Knoll Sanatorium.....	TB	County	90	71	1	66	66
Portage, 7,016—Columbia	Gen	Church	75	50	14	338	1,771
St. Saviour's General Hospital Gen	Gen	Church	75	50	14	338	1,771
Port Washington, 4,046—Ozaukee	Gen	Church	70	48	15	288	1,159
St. Alphonsus Hospital.....	Gen	Church	70	48	15	288	1,159
Prairie du Chien, 4,622—Crawford	Gen	Part	22	12	7	134	401
Beaumont Hospital.....	Gen	Part	22	12	7	134	401
Prairie du Chien Sanitarium- Hospital.....	Gen	NPAasn	54	35	8	88	1,470
Prescott, 857—Pierce	Gen	NPAasn	54	35	8	88	1,470
St. Croixdale Sanitarium... GenN&M	Gen	Corp	50	37	5	23	208
Racine, 67,195—Racine	Gen	Church	118	87	40	723	3,269
St. Luke's Hospital.....	Gen	Church	118	87	40	723	3,269
St. Mary's Hospital.....	Gen	Church	220	121	51	834	6,309
Sunny Rest Sanatorium.....	TB	StateCo	86	77	1	62	62
Reedsburg, 3,608—Sauk	Gen	City	30	23	10	232	1,049
Reedsburg Municipal Hospital Gen	Gen	City	30	23	10	232	1,049
Rhineland, 8,501—Oneida	Gen	Church	75	47	10	251	1,621
St. Mary's Hospital.....	Gen	Church	75	47	10	251	1,621
Rice Lake, 5,779—Barron	Gen	Church	42	23	8	207	1,097
Lakeside Methodist Hospital. Gen	Gen	Church	40	20	11	226	1,219
St. Joseph's Hospital.....	Gen	Church	40	20	11	226	1,219
Richland Center, 4,364—Richland	Gen	NPAasn	65	60	15	309	2,209
Richland Hospital.....	Gen	NPAasn	65	60	15	309	2,209
Ripon, 4,566—Fond du Lac	Gen	City	18	16	6	129	738
Ripon Municipal Hospital... Gen	Gen	City	18	16	6	129	738
River Falls, 2,866—Pierce	Gen	City	23	18	8	140	464
City Hospital.....	Gen	City	23	18	8	140	464
St. Croix Falls, 1,007—Polk	Gen	NPAasn	20	10	4	50	347
St. Croix Falls Hospital... Gen	Gen	NPAasn	20	10	4	50	347
Shawano, 5,565—Shawano	Gen	NPAasn	63	40	16	370	1,460
Shawano Municipal Hospital Gen	Gen	NPAasn	63	40	16	370	1,460
Sheboygan, 40,638—Sheboygan	Gen	Church	208	157	40	861	5,480
St. Nicholas Hospital.....	Gen	Church	208	157	40	861	5,480
Sheboygan Memorial Hosp.. Gen	Gen	NPAasn	112	62	20	458	2,598
Shullsburg, 1,197—Lafayette	Gen	Indiv	15	4	4	27	165
Dr. Ennis' Hospital.....	Gen	Indiv	15	4	4	27	165
South Milwaukee, 11,134—Milwaukee	Gen	Indiv	16	14	6	203	597
South Milwaukee Hospital.. Gen	Gen	Indiv	16	14	6	203	597
Sparta, 5,820—Monroe	Gen	Church	75	54	18	446	1,856
St. Mary's Hospital.....	Gen	Church	75	54	18	446	1,856
Stanley, 2,021—Chippewa	Gen	NPAasn	21	12	7	129	771
Victory Hospital.....	Gen	NPAasn	21	12	7	129	771
Statesan, 110—Waukesha	Gen	State	241	193	1	99	99
Wisconsin State Sana- torium.....	TB	State	241	193	1	99	99
Stevens Point, 15,777—Portage	Gen	Church	63	63	1	108	108
River Pines Sanatorium.....	TB	Church	80	67	20	408	2,576
St. Michael's Hospital.....	Gen	Church	80	67	20	408	2,576
Stoughton, 4,743—Dane	Gen	NPAasn	33	21	9	192	937
Stoughton Hospital.....	Gen	NPAasn	33	21	9	192	937
Sturgeon Bay, 5,439—Door	Gen	NPAasn	36	29	8	263	1,489
Egeland Memorial Hospital.. Gen	Gen	NPAasn	17	14	6	123	726
Leasum Hospital.....	Gen	Indiv	17	14	6	123	726
Superior, 35,136—Douglas	Gen	Church	50	41	10	207	1,102
St. Francis Hospital.....	Gen	Church	38	27	14	367	1,024
St. Joseph's Hospital.....	Gen	Church	128	101	35	413	2,578
St. Mary's Hospital.....	Gen	Church	50	29	6	91	706
Two Rivers Municipal Hosp. Gen	Gen	City	48	30	12	297	1,496
Union Grove, 923—Racine	Gen	State	850	773	1	54	54
Southern Wisconsin Colony and Training School.....	Gen	State	850	773	1	54	54
Veterans Administration... Milwaukee	Gen	State	850	773	1	54	54
Veterans Admin. Facility.... See Milwaukee	Gen	State	850	773	1	54	54
Viroqua, 3,549—Vernon	Gen	Part	23	17	5	195	707
Viroqua Hospital.....	Gen	Part	23	17	5	195	707
Washburn, 2,363—Rayfield	Gen	NPAasn	15	9	5	54	409
Washburn Hospital.....	Gen	NPAasn	15	9	5	54	409

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Watertown, 11,301—Jefferson	Gen	Church	75	53	17	463	1,750
St. Mary's Hospital.....	Gen	Church	75	53	17	463	1,750
Waukesha, 19,242—Waukesha	Gen	Church	75	53	17	463	1,750
Milwaukee Children's Hospi- tal Convalescent Home.....	Gen	Unit of Milwaukee Children's Hospital, Milwaukee	95	55	31	926	2,822
Waukesha Memorial Hospital Gen	Gen	City	95	55	31	926	2,822
Waupaca, 3,458—Waupaca	Gen	Indiv	12	9	4	32	264
City Hospital.....	Gen	Indiv	12	9	4	32	264
Waupaca Hospital and Clinic Gen	Gen	Part	12	9	3	60	228
Waupun, 6,798—Fond du Lac	Gen	State	328	325	1	56	56
Central State Hospital.....	Gen	State	328	325	1	56	56
Wausau, 27,268—Marathon	Gen	County	90	83	1	89	89
Mount View Sanatorium.....	TB	County	90	83	1	89	89
St. Mary's Hospital.....	Gen	Church	150	110	25	673	4,331
Wausau Memorial Hospital.....	Gen	NPAasn	95	67	25	502	2,598
Wauwatosa, 27,769—Milwaukee	Gen	Corp	147	128	1	283	283
Milwaukee County Institutions See Milwaukee	Gen	Corp	147	128	1	283	283
Milwaukee Sanitarium.....	N&M	Corp	147	128	1	283	283
West Bend, 5,452—Washington	Gen	Church	40	25	14	234	935
St. Joseph's Hospital.....	Gen	Church	40	25	14	234	935
West De Pere, Brown	Gen	County	110	91	1	53	53
Hickory Grove Sanatorium.. TB	TB	County	110	91	1	53	53
Whitehall, 1,035—Trempealeau	Gen	NPAasn	30	25	6	193	1,064
Whitehall Community Hosp. Gen	Gen	NPAasn	30	25	6	193	1,064
Whitlaw, 225—Manitowoc	Gen	County	52	42	1	42	42
Maple Crest Sanatorium.....	TB	County	52	42	1	42	42
Wild Rose, 559—Wausara	Gen	Indiv	24	16	4	63	570
Wild Rose Hospital.....	Gen	Indiv	24	16	4	63	570
Winnebago, 150—Winnebago	Gen	Counties	98	98	1	104	104
Sunny View Sanatorium.....	TB	Counties	98	98	1	104	104
Winnebago State Hospital.....	Gen	State	917	843	1	1,032	1,032
Wisconsin Rapids, 11,416—Wood	Gen	NPAasn	85	44	24	537	1,991
Riverview Hospital.....	Gen	NPAasn	85	44	24	537	1,991
Wood, Milwaukee	Gen	NPAasn	85	44	24	537	1,991
Veterans Admin. Facility..... See Milwaukee	Gen	NPAasn	85	44	24	537	1,991
Related Institutions							
Appleton, 28,426—Outagamie	Gen	County	273	262	1	38	38
Outagamie County Asylum.. Ment	Ment	County	273	262	1	38	38
Chippewa Falls, 10,368—Chippewa	Gen	County	364	364	1	65	65
Chippewa County Asylum... Ment	Ment	County	364	364	1	65	65
Dodgeville, 2,369—Iowa	Gen	County	182	170	1	12	12
Iowa County Insane Asylum Ment	Ment	County	182	170	1	12	12
Eau Claire, 30,745—Eau Claire	Gen	County	246	240	1	44	44
Eau Claire County Asylum.. Ment	Ment	County	246	240	1	44	44
Elkhorn, 2,382—Walworth	Gen	County	238	232	1	43	43
Walworth County Asylum for the Insane.....	Ment	County	238	232	1	43	43
Fond du Lac, 27,209—Fond du Lac	Gen	County	327	315	1	47	47
Fond du Lac County Asylum Ment	Ment	County	327	315	1	47	47
Green Bay, 46,235—Brown	Gen	County	304	299	1	62	62
Brown County Asylum.....	Ment	County	304	299	1	62	62
Wisconsin State Reformatory	Gen	State	14	3	1	207	207
Hazel Green, 582—Grant	Gen	Indiv	10	6	5	39	198
Hazel Green Hospital.....	Gen	Indiv	10	6	5	39	198
Itasca, Douglas	Gen	County	356	398	1	71	71
Douglas County Asylum and Tuberculosis Sanatorium.. MentTb	MentTb	County	356	398	1	71	71
Parkland Sanatorium.....	Unit of Douglas County Asylum and Tuberculosis Sanatorium	County	356	398	1	71	71
Janesville, 22,992—Rock	Gen	County	370	327	1	73	73
Rock County Hospital.....	Gen	County	370	327	1	73	73
Jefferson, 3,059—Jefferson	Gen	County	252	235	1	53	53
Jefferson County Asylum for Chronic Insane.....	Ment	County	252	235	1	53	53
Juneau, 1,301—Dodge	Gen	County	212	212	1	94	94
Dodge County Asylum and Home.....	Ment	County	212	212	1	94	94
Kewaunee, 2,533—Kewaunee	Gen	Part	10	4	4	56	171
Dana and Witapelek Hospital Gen	Gen	Part	10	4	4	56	171
Lake Tomahawk, 105—Oneida	Gen	State	48	42	1	70	70
Lake Tomahawk State Camp TB	TB	State	48	42	1	70	70
Lancaster, 2,963—Grant	Gen	County	300	237	1	34	34
Grant County Asylum.....	Ment	County	300	237	1	34	34
Madison, 67,447—Dane	Gen	City	50	16	1	357	357
East Washington Avenue Hospital.....	Iso	City	50	16	1	357	357
Manitowoc, 24,404—Manitowoc	Gen	County	224	211	1	216	216
Manitowoc County Insane Asylum.....	Ment	County	224	211	1	216	216
Marshfield, 10,359—Wood	Gen	County	241	233	1	22	22
Wood County Asylum for Chronic Insane.....	Ment	County	241	233	1	22	22
Menomonie, 6,582—Dunn	Gen	County	190	190	1	165	165
Dunn County Asylum.....	Ment	County	190	190	1	165	165
Milwaukee, 587,472—Milwaukee	Gen	Church	25	35	1	4	4
Layton Home.....	Incur	Church	25	35	1	4	4
Milwaukee County Home for Dependent Children.....	Inst	County	75	40	1	1,458	1,458
St. Camillus Hospital.....	Incur	Church	59	79	1	152	152
Salvation Army Martha Wash- ington Women's Home and Hospital.....	Mat	Church	76	59	15	120	120
Monroe, 6,182—Green	Gen	County	272	216	1	43	43
Green County Asylum.....	Ment	County	272	216	1	43	43
New Richmond, 2,388—St. Croix	Gen	County	162	177	1	21	21
St. Croix County Asylum... Ment	Ment	County	162	177	1	21	21

WISCONSIN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Oconto, 5,362—Oconto County and City Hospital	Gen	NPAssn	18	20	10	97	859
Oshkosh, 39,080—Winnebago Alexian Brothers Hospital... N&M	Church		81	75	..	...	61
Owen, 1,083—Clark Clark County Hospital.....	Ment	County	306	269	..	...	56
Peshigo, 1,947—Marinette Marinette County Asylum... Ment	County		310	297	..	...	31
Racine, 67,385—Racine Lincoln Memorial Hospital... Iso	City		50	31	..	...	197
Racine County Asylum.....	Ment	County	307	262	..	...	261
Racine County Hospital.....	Gen	County	55	49	..	...	84
Reedsburg, 3,668—Sauk Sauk County Home and Asylum	Ment	County	204	190	..	...	16
Richland Center, 1,261—Richland Richland County Asylum....	Ment	County	151	141	..	...	16
Shawano, 5,445—Shawano Shawano County Asylum.....	Ment	County	160	187	..	...	27
Sheboygan, 40,438—Sheboygan Sheboygan County Hospital for Chronic Insane.....	Ment	County	100	270	..	...	51
Spartan, 5,830—Monroe Monroe County Insane Asylum	Ment	County	199	168	..	...	14
Superior, 35,156—Douglas Douglas County Asylum and Tuberculosis Sanatorium ..	See Itasca						
Verona, 5,535—Dane Dane County Asylum.....	Ment	County	297	350	..	...	27
Viroqua, 3,544—Vernon Vernon County Asylum	Ment	County	151	125	..	...	20
Watertown, 11,001—Jefferson Bethesda Lutheran Home for Feeble-minded and Epileptics	McDe	Church	370	370	..	...	26
Waukesha, 19,212—Waukesha Waukesha County Asylum for Chronic Insane	Ment	County	230	225	..	...	33
Wausau, 6,798—Fond du Lac Wisconsin State Prison Hosp.	Inst	State	21	11	..	...	301
Wausau, 27,268—Marathon Marathon County Asylum... Ment	County		215	212	..	...	19
Marathon County Home and Hospital	Gen	Inst	60	51	..	...	183
Wauwatosa, 27,700—Milwaukee Milwaukee County Home for Dependent Children	See Milwaukee						
St. Camillus Hospital.....	See Milwaukee						
Salvation Army Martha Washington Women's Home and Hospital	See Milwaukee						
West Bend, 5,452—Washington Washington County Asylum for Chronic Insane.....	Ment	County	151	146	..	...	14
West Salem, 1,254—La Crosse La Crosse County Asylum for Insane	Ment	County	286	281	..	...	26
Weyauwega, 1,173—Waupaca Waupaca County Insane Asylum	Ment	County	200	197	..	...	23
Whitehall, 1,635—Trempealeau Trempealeau County Asylum	Ment	County	155	146	..	...	18
Winnebago, 150—Winnebago Winnebago County Asylum..	Ment	County	265	258	..	...	29
Wyoceana, 706—Columbia Columbia County Asylum... Ment	County		310	290	..	...	30

WYOMING

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Basin, 1,069—Big Horn Basin Hospital	Gen	Indlv	12	4	5	60	130
Wyoming State Sanatorium* TB	State		33	22	..	...	47
Casper, 17,961—Natrona Memorial Hospital of Natrona County*	Gen	County	116	75	24	435	2,879
Cheyenne, 22,474—Laramie Memorial Hospital of Laramie County*	Gen	County	133	85	25	728	3,154
Veterans Admin. Facility*... Gen	Vet		151	112	..	...	1,193
Cody, 2,530—Park Cody Hospital	Gen	NPAssn	23	14	6	112	636
Douglas, 2,205—Converse Converse County Memorial Hospital	Gen	County	20	13	8	124	578
Evanson, 3,605—Uinta Wyoming State Hospital*... Ment	State		675	616	..	...	116
Fort Warren, 22—Laramie Station Hospital*	Gen	Army	210	101	6	41	2,441
Fort Washakie, 150—Fremont Wind River Indian Hospital. Gen	IA		41	20	6	100	511
Gillette, 2,177—Campbell McHenry Hospital	Gen	Indlv	15	12	4	44	118
Greybull, 1,828—Big Horn St. Luke's Hospital.....	Gen	Indlv	7	4	6	81	205
Jackson, 1,046—Teton St. John's Hospital.....	Gen	Church	28	8	4	87	530

WYOMING—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Kemmerer, 2,026—Lincoln Lincoln County Miner's Hosp. Gen	NPAssn		25	10	6	78	451
Lander, 2,591—Fremont Bishop Randall Hospital....	Gen	Church	20	12	6	62	418
Laramie, 10,627—Albany Ivanson Memorial Hospital..	Gen	NPAssn	70	42	15	326	2,421
Lovell, 2,175—Big Horn Lovell Hospital	Gen	Part	20	9	8	113	452
Lusk, 1,811—Niobrara Lusk Hospital	Gen	Indlv	25	13	9	43	398
Spencer Hospital	Gen	Indlv	17	11	6	75	721
Rock Springs, 9,827—Sweetwater Wyoming General Hospital* Gen	State		100	82	30	447	2,723
Sheridan, 10,529—Sheridan Sheridan County Memorial Hospital*	Gen	County	63	49	12	228	1,577
Veterans Admin. Facility*... Ment	Vet		750	715	..	...	219
Wheatland, 2,110—Platte Wheatland General Hospital* Gen	NPAssn		41	19	7	124	1,162
Worland, 2,710—Washakie Worland Hospital	Gen	Corp	19	8	8	185	650

Related Institutions

Hanna, 1,127—Carbon Hanna Hospital	Gen	NPAssn	14	3	3	50	1,005
Lander, 2,594—Fremont Wyoming State Training School	McDe	State	303	390	..	...	12
Sheridan, 10,529—Sheridan Reynolds Home	Gen	Indlv	11	9	8	183	331

ALASKA

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anchorage, 3,495 Alaska Railroad Base Hosp.	Gen	Fed	30	16	5	33	1,315
Providence Hospital	Gen	Church	55	39	10	204	2,255
Barrow, 363 Point Barrow Hospital.....	Gen	Fed	25	17	3	25	151
Bethel, 376 Bethel Hospital	Gen	IA	36	31	6	41	403
Cordova, 938 Cordova General Hospital... Gen	Indlv		30	18	4	8	154
Fairbanks, 3,155 St. Joseph's Hospital.....	Gen	Church	51	30	8	146	1,151
Fort Yukon, 274 Hudson Stuck Memorial Hospital*	Gen	Church	40	20	4	23	207
Haines, 257 Station Hospital	Gen	Army	15	7	1	3	141
Juneau, 5,729 St. Ann's Hospital.....	Gen	Church	52	30	8	126	964
U. S. Hospital for Natives.. Gen	Tb IA		60	49	8	58	323
Kanakanak, 133 Kanakanak Native Hospital. Gen	IA		31	25	6	23	207
Ketchikan, 4,495 Ketchikan General Hospital.. Gen	Church		50	40	10	121	1,273
Kodiak, 861 Contractors Hospital	Gen	Idus NPAssn	42	...	5	...	...
Griffin Memorial Hospital... Gen	Ter		18	4	6	37	229
Kotzebue, 372 Kotzebue Hospital	Gen	IA	17	...	1	...	...
Nome, 1,559 Maynard-Columbus Hospital. Gen	Church		23	10	3	21	150
Palmer, 150 Matanuska Valley Hospital.. Gen	Church		28	18	4	28	331
Petersburg, 1,333 Petersburg General Hospital. Gen	City		10	5	4	36	215
St. Paul Island (Unalaska P. O.), 299 St. Paul Island Hospital... Gen	Fed		10	...	2	...	...
Seward, 919 Seward General Hospital.... Gen	Church		30	19	4	42	618
Sitka, 1,987 Pioneers' Home Hospital... Inst	Ter		45	25	..	...	113
Skagway, 634 White Pass Hospital.....	Gen	NPAssn	10	4	2	7	149
Tanana, 170 Tanana Hospital	Gen	IA	30	...	6	...	...
Valdez, 529 Valdez Community Hospital. Gen	NPAssn		17	8	2	9	433
Wrangell, 1,163 Bishop Rowe General Hosp.. Gen	Church		14	8	3	11	80

CANAL ZONE

Ancon, 1,916 Gorgas Hospital**	Gen	Fed	1,703	1,157	43	767	33,389
Balboa, 3,923 Palo Seco Leper Colony.....	Lepro	Fed	140	116	..	...	10
Station Hospital	Gen	Army	35	...	..	...	...
Corozal, 1,370 Corozal Hospital	Ment	Inst Fed	455	389	..	...	385
Station Hospital	Gen	Army	47	33	..	...	1,009

CANAL ZONE—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Cristobal, 826							
Colon Hospital	Gen	Fed	176	118	25	493	4,257
Fort Randolph (Coco Solo P. O.), 1,801							
Station Hospital	Gen	Army	25	17	..	...	1,900
Fort Sherman, 1,329							
Station Hospital	Gen	Army	59	53	..	...	1,295

HAWAII

Aiea, 3,553—Honolulu	Gen	NPAssn	37	23	4	51	1,186
Aiea Hospital							
Eleele, 312—Kauai							
McBryde Sugar Company's Hospital	Gen	NPAssn	35	29	9	141	851
Ewa, 3,570—Honolulu							
Ewa Plantation Company Hospital	Gen	NPAssn	48	23	6	102	994
Halea, —Hawaii							
Honokaa Sugar Company Hospital	Gen	NPAssn	40	12	4	49	389
Hakalau, 525—Hawaii	Gen	NPAssn	22	9	3	25	327
Hakalau Plantation Hospital							
Hana, 293—Maui							
Hana County Hospital	Gen	County	36	...	4	...	...
Hanapepe, 1,088—Kauai							
Betsul Hospital	Gen	Indiv	16	9	3	38	...
Hilo, 23,351—Hawaii							
Hilo Memorial Hospital	Gen	County	142	50	18	414	2,914
Dr. Z. Matayoshi Hospital	Gen	Indiv	42	12	5	31	370
Puunahia Hospital	TB	County	179	167	..	2	106
Honokaa, 1,009—Hawaii							
Okada Hospital	Gen	Indiv	6	4	3	29	138
Honolulu, 179,359—Honolulu							
Kalihi Hospital	Lepro	Ter	140	...	..	...	...
Kapiolani Maternity and Gynecological Hospital	MatGyn	NPAssn	65	62	65	2,395	3,078
Kauikoolani Children's Hosp. Chil	NPAssn		75	54	..	...	3,433
Leahi Hospital	TB	NPAssn	493	404	..	7	419
Queen's Hospital	Gen	NPAssn	312	308	46	1,918	13,409
St. Francis Hospital	Gen	Church	93	102	16	760	4,193
Shriners Hospital for Crippled Children	Orth	NPAssn	28	23	..	...	78
Tripler General Hospital	Gen	Army	407	279	10	105	4,242
Hooluhua, —Maui							
Robert W. Shingle, Jr., Memorial Hospital	Gen	Church	63	15	8	62	468
Kahuku, 1,505—Honolulu							
Kahuku Hospital	Gen	NPAssn	30	20	6	125	1,045
Kalaupapa, —Kalaupapa	Lepro	Ter	515	386	2	2	38
Kalaupapa Settlement							
Kaneohe, 112—Honolulu							
Territorial Hospital	Ment	Ter	926	1,014	..	...	275
Kapaa, 2,828—Kauai							
Samuel Mabelona Memorial Hospital	TB	County	120	92	..	...	70
Kealahou, 350—Hawaii							
Kona Hospital	Gen	County	50	20	7	95	410
Kilauea, 1,232—Kauai							
Kilauea Hospital	Gen	NPAssn	25	8	4	24	231
Kohala, 720—Hawaii							
Kohala County Hospital	Gen	County	50	16	6	111	749
Koloa, 1,844—Kauai							
Koloa Sugar Company Hosp. Gen	NPAssn		22	5	3	27	229
Kula (Waiahoia P. O.), 25—Maui							
Kula General Hospital	Gen	County	20	9	6	41	395
Kula Sanatorium	TB	County	206	169	..	...	116
Lahaina, 5,217—Maui							
Pioneer Mill Company's Hospital	Gen	NPAssn	65	38	9	139	1,185
Lanai City, 3,597—Maui							
Lanai City Hospital	Gen	NPAssn	31	11	5	94	713
Lihue, 4,272—Kauai							
G. N. Wilcox Memorial Hospital	Gen	NPAssn	94	38	11	249	1,467
Maunaloa, —Maui							
Maunaloa Hospital	Gen	NPAssn	19	2	5	17	266
Olan, 597—Hawaii							
Olaa Hospital	Gen	NPAssn	49	21	11	126	938
Ookala, 526—Hawaii							
Ookala Hospital	Gen	NPAssn	9	4	4	20	100
Panauilo, 1,233—Hawaii							
Hamakua Mill Company Hospital	Gen	NPAssn	11	...	2	...	...
Pahala, 290—Hawaii							
Hawaiian Agricultural Company Hospital	Gen	NPAssn	38	15	7	62	655
Pala, 4,272—Maui							
Maui Agricultural Company's Pala Hospital	Gen	NPAssn	102	...	10	...	...
Papaaloa, 73—Hawaii							
Laupahoehoe Sugar Company Hospital	Gen	NPAssn	18	7	4	38	289
Pearl City, 1,071—Honolulu							
Waimano Home for Feeble-minded Persons	MeDe	Ter	408	397	..	...	16
Pepeekeo, 520—Hawaii							
Pepeekeo Hospital	Gen	NPAssn	43	24	4	97	1,080
Puunene, 4,456—Maui							
Puunene Hospital	Gen	NPAssn	110	84	10	105	2,133
Schofield Barracks (Honolulu P. O.), 4,260—Honolulu							
Station Hospital	Gen	Army	530	805	13	100	6,271

HAWAII—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Waialua, 2,532—Honolulu							
Waialua Agricultural Company, Ltd., Hospital	Gen	NPAssn	38	13	6	113	513
Wailuku, 7,319—Maui							
Malulani Hospital	Gen	County	110	61	16	313	2,877
Waimea, 2,091—Kauai							
Waimea Hospital	Gen	NPAssn	36	24	6	136	1,103
Waipahu, 6,906—Honolulu							
Oahu Sugar Company Hosp. Gen	NPAssn		50	32	8	130	1,194
Tamara Hospital	Gen	Indiv	7	4	3	104	205

PUERTO RICO

Arecibo, 22,132—Arecibo							
Arecibo Charity District Hospital	Gen	Gov't	284	233	34	420	3,025
Clinica Dr. Susonf.	Gen	Indiv	124	...	..	...	...
Bayamon, 14,596—San Juan							
Bayamon Charity District Hospital	Gen	Gov't	299	232	35	710	4,731
Caguas, 24,378—Guayama							
Clinica San Rafael	Gen	Indiv	65	25	4	70	769
Cayey, 5,622—Guayama							
Clinica Font	Gen	Indiv	40	...	..	...	...
Central Aguirre, —Guayama							
Central Aguirre Hospital	Gen	NPAssn	23	22	5	17	987
Fajardo, 7,108—Humacao							
Coomb's Hospital	Indus	NPAssn	30	8	..	3	956
Fajardo Charity District Hospital	Gen	Gov't	300	182	35	466	4,300
Guayama, 16,910—Guayama							
Tuberculosis Hospital	TB	Gov't	100	100	..	...	331
Humacao, 7,624—Humacao							
Clinica Oriente	Gen	Part	48	27	5	53	930
Ryder Memorial Hospital	Gen	Church	52	36	8	69	1,156
Jayuya, 1,808—Ponce							
Catalina Figueras Memorial Hospital	Gen	City	15	...	..	...	...
Juana Diaz, 3,931—Ponce							
Municipal Hospital	Gen	City	40	...	6	...	...
Mayaguez, 50,371—Mayaguez							
Clinica Betances	Gen	Indiv	100	21	10	14	1,133
Mayaguez and Western Polyclinic	Gen	Part	100	...	3	...	...
Tuberculosis Hospital	TB	Gov't	200	...	..	...	459
Ponce, 65,179—Ponce							
Clinica Quirurgica Dr. Pila	Gen	NPAssn	185	104	33	128	2,883
Hospital Municipal Valentin Tricoche	Gen	City	180	...	12	...	...
Hospital Santo Asilo de Damas	Gen	Church	120	74	20	183	3,234
Insular Blind Asylum	Inst	Gov't	100	89	..	...	350
St. Luke's Memorial Hosp.	Gen	Church	80	50	8	84	1,871
Tuberculosis Hospital	TB	Gov't	312	205	..	...	598
Rio Piedras, 19,933—San Juan							
Clinica Dr. M. Julia	N&M	Corp	200	150	..	...	...
Insular Leprosy Colony	Lepro	Gov't	80	...	..	...	...
Insular Tuberculosis Sanatorium	TB	Gov't	800	790	..	5	993
Psychiatric Hospital of Puerto Rico	Ment	Gov't	1,200	...	..	...	...
Sanatorio de la Sociedad Espanola de Auxilio Mutuo y Beneficencia de Puerto Rico	Gen	NPAssn	120	85	15	207	1,800
Salinas, 3,176—Guayama							
Hospital Municipal	Gen	City	46	...	6	...	...
San Juan, 169,255—San Juan							
Capital City Hospitals	Gen	City	406	...	60	...	...
Clinica Miramar	Gen	Indiv	160	41	5	1	336
Hospital Diaz Garcia	Gen	Corp	80	55	6	79	...
Hospital San Jose	Gen	Corp	120	70	16	196	1,613
Ophthalmic Institute of Puerto Rico	Eye	Corp	60	36	..	...	1,570
Presbyterian Hospital	Gen	Church	120	...	6	...	...
Station Hospital	Gen	Army	150	70	2	8	969
University Hospital of the School of Tropical Med.	Gen	Gov't	60	37	2	...	...
Santurce, —San Juan							
Hospital Mimya	Gen	Indiv	100	...	15	...	...
Utando, 4,430—Arecibo							
Clinica San Miguel	Gen	Indiv	70	...	3	...	...
Yauco, 9,985—Mayaguez							
Clinica "El Amparo"	Gen	Indiv	22	1	1	5	75

VIRGIN ISLANDS

Charlotte Amalie, 9,501—St. Thomas Island							
Municipal Hospital	Gen	CyCo	100	74	12	241	1,613
Christiansted, 4,495—St. Croix Island							
Christiansted Municipal Hospital	Gen	City	64	52	14	93	1,015
St. Croix Hospital for Leprosy	Lepro	City	92	56	..	...	...
Frederiksted, 2,498—St. Croix Island							
Frederiksted Municipal Hosp. Gen	City		65	47	13	121	1,332

SCHOOLS FOR X-RAY TECHNICIANS

The American Registry of X-Ray Technicians, which is sponsored by the American College of Radiology, requested that the American Medical Association assume the responsibilities of approving schools for x-ray technicians. This request was embodied in a resolution presented to the House of Delegates of the American Medical Association during the 1943 session. Action on the resolution delegated the Council on Medical Education and Hospitals to establish standards of training and to inspect schools and publish lists of approved courses.

Selected schools have been visited and information has been obtained from others. Much valuable assistance has been furnished by the American Registry of

X-Ray Technicians and the American College of Radiology in correlating this information with desirable standards of training. In cooperation with the American Registry of X-Ray Technicians and the American College of Radiology the Council on Medical Education and Hospitals has prepared minimum essentials which will be presented to the House of Delegates at its next session in June 1944. These essentials will probably be published in one of the June or July issues of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Reprints will be available at a later date. Graduate x-ray technicians desiring registration should communicate with the American Registry of X-Ray Technicians, 2909 Raleigh Avenue, Minneapolis 16.

SCHOOLS FOR MEDICAL RECORD LIBRARIANS

The American Association of Medical Record Librarians presented a formal resolution to the 1942 session of the House of Delegates of the American Medical Association requesting the latter to assume the responsibilities of approving schools for medical record librarians. Action on the resolution granted the Council on Medical Education and Hospitals authority to establish standards, inspect training programs and publish lists of approved schools. Minimum essentials were formulated with the assistance of the American Association of Medical Record Librarians after all existing schools were inspected. These essentials were officially accepted by the House of Delegates in 1943. The first list of approved schools was published in June 1943. Currently there are 10 schools on the approved list.

Graduates of the approved schools are eligible to take registration examinations and are qualified to assume the responsibilities of a record department. Organized instruction in most instances exceeds the minimum required in the essentials. Twenty-five of the 27 graduates last year had had considerably more than the minimum experience in the record room and related departments. All students obtained more than the required amount of organized instruction.

The maximum capacity of all approved schools is 90 students a year. This is considerably less than the 729 additional medical record librarians employed full time in United States hospitals during 1943. Unless additional schools are developed and sufficient students are trained properly, hospitals will be forced to rely on increasing numbers of inadequately qualified personnel in the record department.

Six of the 10 approved schools are affiliated with colleges or universities. Three training programs are completely coordinated with collegiate studies and are designed for high school graduates who desire a four year degree course. Under these conditions twelve months are devoted to supervised hospital instruction and experience. During this time students earn from 8 to 30 semester credits for the hospital instruction.

Special or short courses are organized in 6 schools for experienced medical record librarians who are preparing to take examinations for registration or who desire to become familiar with the Standard Nomenclature.

Correspondence regarding registration should be addressed to the Board of Registry of the American Association of Medical Record Librarians, St. Luke's Hospital, Milwaukee.

APPROVED SCHOOLS FOR MEDICAL RECORD LIBRARIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	College Affiliation	Length of Course	Classes Start	Entrance Requirements*	Tuition	Certificate, Diploma, Degree	Maximum Enrollment
Samuel Merritt Hospital, Oakland, Calif.....	None	12 mos.	JanAug	2 yrs. coll. or R. N.	\$125	Diploma	6
Grant Hospital, Chicago.....	None	12 mos.	FebSept	2 yrs. coll. or R. N.	\$125	Certificate	7
St. Joseph Hospital, Chicago.....	DePaul University	12 mos.	FebSept	2 yrs. coll. or R. N.	\$125	Diploma	8
Massachusetts General Hospital, Boston.....	None	9 mos.	FebSept	2 yrs. coll. or R. N.	\$90	Certificate	2
Mercy College, Detroit.....	Mercy College	4 yrs.	FebSept	High School	\$150 yr.	Cert. & Degree	5
College of St. Scholastica, Duluth, Minn.....	College of St. Scholastica	†	Sept	High School	\$315	B. A.	10
St. Louis University, St. Louis.....	St. Louis University....	4 yrs.	JanSept	High School	\$250 yr.	B. S.	16
Rochester General Hospital, Rochester, N. Y.....	None	12 mos.	FebSept	2 yrs. coll. or R. N.	\$150	Certificate	8
Duke Hospital, Durham, N. C.....	Duke University	12 mos.	Varies	A. B. or B. S.	\$100	Certificate	12
Graduate Hosp. of the Univ. of Penn., Philadelphia.	Univ. of Pennsylvania..	12 mos.	Sept	2 yrs. coll. or R. N.	\$200	Certificate	16

* All students are required to be proficient in typing and shorthand. † Four academic years and one summer session.

SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS

At the 1933 session of the House of Delegates of the American Medical Association a resolution was introduced that some plans be effected for the establishment of standards, ratings and inspections of training schools for occupational therapy technicians. This program was referred to the Council on Medical Education and Hospitals, and all of the 13 existing schools were surveyed. The Essentials of an Acceptable School of Occupational Therapy were ratified by the House of Delegates of the American Medical Association at the Atlantic City session in 1935, such standards to become effective on Jan. 1, 1939. A report of the Council on Medical Education and Hospitals to the House of Delegates in 1936 contained the names of 4 schools which had already met these standards. There are currently 13 schools on the approved list.

Six schools for occupational therapy technicians were approved last year. An equal number of schools have started classes and will be ready for consideration in the next year or two. Interest in creating new schools has resulted in the sudden expansion of occupational therapy departments in the hospitals maintained by the armed forces. Graduates of the approved schools are eligible for U. S. Civil Service appointments in Army hospitals.

In the calendar year of 1942, 146 students were graduated by the 7 approved schools. There were 162 graduates in 1943. Five of the 13 currently approved schools will have their first graduates during 1944.

Anticipated graduates for 1944 total 218 in the approved schools and 14 in the recently established schools. Emphasis has been placed on increasing the

student enrolment in regular and advanced standing courses. Also several of the schools have accelerated their training programs by offering three semesters each year. These factors might make it possible to graduate more than the anticipated number of 232 during 1944. However, the maximum capacity of all schools totals 553 for the senior year plus 172 for the short or advanced standing courses. Thus a maximum of 725 students could be trained next year by the approved schools and those new schools which will probably be considered during the year. It appears that enrolment equaling the present maximum capacity of all schools will be necessary to satisfy Army needs for the next two years. Requirements of civilian hospitals, Veterans Administration facilities, rehabilitation programs and others will create an extra demand. The total needs will greatly exceed the maximum capacity of all schools.

The long period which is necessary to train prospective graduates adequately in the arts, crafts, biologic sciences and medical subjects handicaps the efforts to produce large numbers of occupational therapy technicians in a short time. Advanced standing courses open to individuals who have had sufficient collegiate training in the arts and crafts require from sixteen to twenty-one months instruction and experience before these students are thoroughly qualified. Instruction is on the college level in all but one school, and the instruction there appears to be very similar to that found in many accredited colleges.

APPROVED SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	College Affiliation	Duration of Course	Classes Start	Entrance Requirements	Tuition per Year	Certificate, Diploma, Degree	Graduates in 1943
University of Kansas, Lawrence	University of Kansas	4 yrs	Every semester	High Sch	Univ fees	Degree	None
Boston School of Occupational Therapy, 7 Harcourt St., Boston	None	28 mos	July Oct	1 yr. coll	\$300	Diploma	27
Kalamazoo State Hospital School of Occupational Therapy, Kalamazoo, Mich	Western Michigan College of Education	25 mos	MarNov	1 yr. coll	Coll fees	Dipl & B S	15
Michigan State Normal College, Ypsilanti	Michigan State Normal College and University of Michigan	3 1/2 yrs	Every semester	High Sch	\$67	Dipl & Degree	None
St. Louis School of Occupational and Recreational Therapy, 4567 Scott Ave., St. Louis	Washington University	27 mos 45 mos	Sept Sept.	2 yrs coll High Sch	\$250 Univ fees	Diploma } Degree }	13
Columbia University, 116th St and Broadway, New York City	Columbia University	27 mos	FebSept	1 yr coll	Univ fees	Certificate	None
New York University School of Education, 100 Washington Sq. E., New York City	New York University	3 1/2 yrs 4 1/2 yrs	Varies Varies	1 yr coll High Sch	\$450 \$450	Certificate } Degree }	4
Ohio State University, Columbus	Ohio State University	3 yrs	Quarterly	High Sch	\$100	Certificate	None
Philadelphia School of Occupational Therapy, 419 S. 19th St., Philadelphia	University of Pennsylvania	24 mos 3 1/2 yrs	Varies Varies	1 yr coll High Sch	\$300 \$600	Diploma } B S }	38
Richmond Professional Institute, 901 W. Franklin St., Richmond, Va	College of William and Mary	3 yrs.	FebSept	1 yr coll	\$200-\$220	Certificate	None
Milwaukee Downer College Dept of Occupational Therapy, 2512 E. Hartford, Milwaukee	Milwaukee Downer College	3 yrs. 5 yrs	Sept Sept	1 yr. coll High Sch.	\$250 \$220	Diploma } B S }	25
Mount Mary College, 2900 Menomonee River Dr., Milwaukee	Mount Mary College	5 yrs	Sept	High Sch.	\$230	B S	7
University of Toronto, Dept of University Extension, Toronto, Ont., Canada	University of Toronto	3 yrs.	Sept	1 yr coll.	\$175	Diploma	33

SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

The House of Delegates of the American Medical Association in 1934 requested that some plan be effected for the establishment of standards, ratings and inspections of schools for the training of physical therapy technicians. The Council on Medical Education and Hospitals assumed responsibility for this program and by 1936 had completed a survey of these schools. Certain minimum standards were formulated. These were presented to the House of Delegates of the American Medical Association and were ratified in May 1936. The first published list of 13 approved schools for physical therapy technicians appeared in THE JOURNAL in August 1936. At present there are 28 approved schools.

Six month emergency courses continue to be popular. The 17 schools approved for this type of training produced 235 physical therapy aides last year. After obtaining an additional six months of experience in army hospitals, these students are eligible for registration examinations. Individuals who are planning to work in civilian hospitals should not take the emergency course but should enroll in the regular course, which is presented in nine or more months of instruction. The 23 schools offering the regular course graduated 190 students in 1943. Emergency and regular programs trained 435 students, or an increase of only 9 over the previous year.

Army needs for properly trained physical therapy technicians or aides were much greater than the total graduates. Estimates of Army and Navy needs for the current year are over twice the present number of graduates. In fact the needs exceed not only the 719

anticipated graduates during 1944 but also the maximum capacity of both the regular and the emergency courses, or 816 students. Next year the Veterans Administration and rehabilitation programs will probably require equally large numbers of graduates. To meet these demands there must be more schools approved, and greater effort will be required to encourage more students to enroll.

Only four of the approved schools require more than the minimum entrance requirements of two years of college credit. Ten of the schools have courses arranged so the students can receive from 20 to 50 semester hours of credit toward a degree, while one four year program grants 131 credits. Tuition is not charged for seven of the emergency courses and three of the regular curriculums. A total of 220 graduates were produced by these ten courses. Other schools charge from \$72 to \$432 a year, but many of the higher tuitions are university fees. The mean tuition of all emergency courses remains at \$200, while the average has dropped to \$132. Tuition for the regular curriculum averages \$212, while the mean is \$200.

Universities, medical schools, colleges or hospitals having suitable facilities in physical therapy are urged to consider the establishment of acceptable programs in this field.

For further information regarding the approval of technical courses, communicate with the Council on Medical Education and Hospitals. Individuals desiring registration should write to the American Registry of Physical Therapy Technicians, 30 North Michigan Avenue, Chicago 2.

APPROVED SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Entrance Requirement*	Emergency Course				Regular Course			
		Length in Months	Classes Start	Tuition	Certificate, Diploma, Degree	Length in Months	Classes Start	Tuition	Certificate, Diploma, Degree
Army and Navy General Hospital, Hot Springs National Park, Ark.	†	6	JanJuly	None	Certificate	..	.....	....	.....
Children's Hospital, Los Angeles.	a-b-c	6	FebAug	\$260	Certificate	12	FebAug	\$200	Diploma
College of Medical Evangelists, Los Angeles ¹	a-b-c	..	.....	.....	.....	12	JanJuly	\$215	Certificate
University of California Hospital, San Francisco ¹	a-b	..	.....	.....	.....	12	MarOct	\$150	Certificate
Stanford University, Stanford University, Calif. ¹	a-b-d ²	7	Quarterly	\$286	Certificate	10	Quarterly	\$409	Cert. or Degree
Fitzsimons General Hospital, Denver.	†	6	FebAug	None	Certificate	..	.....	....	.....
Walter Reed General Hospital, Washington, D. C.	†	6	Quarterly	None	Certificate	..	.....	....	.....
Northwestern University Medical School, Chicago.	a-b-c	..	.....	.....	.....	9	JulyOct	\$200	Certificate
State University of Iowa Medical School, Iowa City.	b-c	6	MarSept	None	Certificate	9	MarSept	None	Certificate
Bouvé-Boston School of Physical Education, Boston.	a-b-c ³	6	June	\$250	Certificate	3-4 yrs.	Sept	\$400 yr.	Dipl. or Degree
Harvard Medical School, Boston.	a-b-c	6	MarSept	\$250	Certificate	9	MarSept	\$300	Certificate
Boston University Sargent College of Physical Education, Cambridge, Mass.	a-b-c	(Given in conjunction with Harvard)				19	Oct	\$435 yr.	Cert. & Degree
University of Minnesota, Minneapolis ¹	a-b-c ⁴	..	.....	.....	.....	12	Mar	\$168 ⁵	Certificate
Mayo Clinic, Rochester, Minn. ¹	a-b-c	6	JanJuly	None	Certificate	9	JanJuly	None	Certificate
Barnes Hospital, St. Louis.	a-b-c	..	.....	.....	.....	9	Oct	\$200	Certificate
St. Louis University School of Nursing, St. Louis ¹	a-b-c ³	8	JanSept	\$250	Certificate	4 yrs.	JanSept	\$250 yr.	Cert. & Degree
O'Reilly General Hospital, Springfield, Mo.	†	6	JanJuly	None	Certificate	..	.....	....	.....
Columbia University, New York City.	a-b-c	..	.....	.....	.....	10	FebSept	\$300	Certificate
Hospital for Special Surgery, New York City ¹	a-b-c	6	Jan	\$200	Diploma	9	Sept	\$300	Diploma
New York University School of Education, New York City ¹	a-b-c	..	.....	.....	.....	9	FebSept	\$432	Cert. or Degree
Duke Hospital, Durham, N. C. ¹	a-b-c	..	.....	.....	.....	9	Sept	\$200	Certificate
Cleveland Clinic Foundation Hospital, Cleveland.	a-b-c	..	.....	.....	.....	9	Sept	None	Certificate
D. T. Watson School of Physiotherapy, Leedsdale, Pa. ¹	a-b-c	6	AprOct	\$200	Diploma	12	Oct	\$200	Diploma
Graduate Hosp. of the Univ. of Pennsylvania, Philadelphia ¹	a-b-c	..	.....	.....	.....	12	JanSept	\$200	Certificate
University of Texas School of Medicine, Galveston.	a-b ⁶	..	.....	.....	.....	9	JanMarJuly	\$130 ⁵	Certificate
Brooke General Hospital, San Antonio, Texas.	†	6	JanJulyOct	None	Certificate	..	.....	....	.....
Richmond Professional Institute, Richmond, Va.	a-d ⁶	6	Sept	\$200 ⁵	Certificate	9-12	Sept	\$200 ⁵	Cert. & Degree
University of Wisconsin Medical School, Madison ¹	a-b ⁷	6	AprOct	\$72 ⁵	Certificate	12	AprOct	\$96 ⁵	Certificate

* Courses are so arranged that any of the entrance requirements will qualify students for training. a = Graduation from accredited school of nursing; b = Graduation from accredited school of physical education; c = Two years of college with science courses; d = Three years of college with science courses.

† For complete information regarding entrance to Army training schools write to Major Emma E. Vogel, Director of Physical Therapy Aides, Office of the Surgeon General, War Department, Washington, D. C.

1. Male students admitted.
2. High school graduates accepted for four-year course leading to A.B. degree; students admitted quarterly and tuition is \$143 per quarter.
3. High school graduates admitted to regular course.
4. Medical technology graduates with B.S. degree also admitted.
5. Non-residents charged additional fee.
6. Those with degree from any accredited college also accepted.
7. Students with two years of college admitted to emergency course only.

SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

The original survey of 196 schools for clinical laboratory technicians was published in *THE JOURNAL*, Aug. 29, 1936 together with the first list of 96 approved schools. Essentials had been formulated by the Council on Medical Education and Hospitals of the American Medical Association with the cooperation of the American Society of Clinical Pathologists and ratified by the House of Delegates of the American Medical Association in May 1936.

The Council approves 243 schools for clinical laboratory technicians in forty states and the District of Columbia. Last year 18 schools were added to the Council's list. All of the approved schools provide adequate hospital experience under satisfactory supervision of qualified instructors. The scope of teaching material and the rotation of assignments has in each instance been determined sufficient to give students a broad training and experience. Average enrolment in these schools is small and thus individual instruction is encouraged.

Many factors influence the maximum number of students admitted to these schools. This year the total maximum capacity amounts to 1,783 students, or an average of $7\frac{1}{3}$ per school. The theoretical maximum capacity, if determined by the number of instructors, would total about twice this number.

A total of 1,034 students were graduated from all the approved schools during 1943, or an average of $4\frac{1}{4}$ graduates per school. This is the second year in succession that the average number of graduates per school has declined, although there has been a net increase in the number of approved schools each year. More effort must be devoted to increasing the number of graduates from approved schools. Otherwise hospitals, clinics and physicians will be forced to rely on individuals whose background of training and experience is definitely inferior to the standards that have been set for qualified technicians. The seriousness of this problem is emphasized by the fact that last year hospitals reported an increased employment of 2,383 full time and 238 part time clinical laboratory technicians, while only approximately 1,000 were graduated. Last year the Council on

Medical Education and Hospitals urged that every justifiable effort should be made to increase the number of students. Now, with the employment of large numbers of "technicians," many of whom undoubtedly have not had sufficient preparation, and with the apparent demand for more technicians this year, the problem of adequately training sufficient numbers of technicians is more acute.

Last year 64 per cent of the schools admitted students with the minimum prerequisites. This year 68 per cent require two years of college credit, while 18 per cent select applicants who have had three years and 14 per cent demand a college degree. This tendency to accept students with the minimum entrance requirements seems to be more common in the new schools.

Approximately 82 per cent of the schools offer twelve months of training, while only 11 per cent present eighteen months of organized instruction and experience to their students. These data represent a slight increase in the minimum of twelve months of training. No tuition fee is reported by 132 schools, or 54 per cent of those approved. Average tuition for all schools, except the 29 which require university fees, amounts to \$41. This is a sizable decrease in the average tuition. Only 16 per cent of the schools charge more than \$150. The highest tuition, excluding university fees, is \$300.

Affiliations exist between the approved schools and accredited colleges in 126 instances, or 51 per cent of all schools. Most of these affiliations result in a complete year of college credit for time devoted to the hospital training. Such an arrangement permits the student to obtain a degree from the college if three years or more of acceptable credits have been earned prior to the hospital training.

Correspondence regarding schools for the training of clinical laboratory technicians should be addressed to the office of the Council on Medical Education and Hospitals. Graduates of approved schools desiring registration should communicate with the Board of Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Ind.

APPROVED SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: Under "Tuition" the letter B indicates that a breakage fee is charged; the letter U indicates university fees. Degrees mentioned in last column are granted by affiliated colleges and universities. Students lacking the scholastic requirements should contact the registrar of the college or university and not the hospital. Those who wish to enroll in a course given by the college or university or who desire to transfer their credits should correspond with the registrar and not the hospital.

Name and Location of School	College Affiliation	College Credit Obtained at Hospital	Minimum Pre-requisite College Training	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
ALABAMA								
Hillman Hospital, Birmingham *			Degree	18	4	July/Sept	None	Certificate
Jefferson Hospital, Birmingham *			3 yrs	12	10	Varies	B	Certificate
South Highlands Infirmary, Birmingham *			2 yrs	17	5	Feb/June	None	Certificate
St. Margaret's Hospital, Montgomery *	Huntingdon College	6 sem hrs	Degree	12	2	Jan/June	B	Certificate
ARIZONA								
St. Joseph's Hospital, Phoenix *	Arizona State Teach Coll (Tempe)	32 sem hrs	2 yrs	12	4	July	\$120	None
ARKANSAS								
University Hospital, Little Rock *	Univ. of Arkansas School of Med ..	75½ quart hrs	2 & 3 yrs	12	4	Varies	\$100	Cert & B S.
CALIFORNIA								
Children's Hospital, Los Angeles			Degree	12	5	Varies	None	Certificate
Los Angeles County Hospital, Los Angeles *	University of Southern California	None	2 yrs	15	14	Varies	None	Certificate
St. Vincent's Hospital, Los Angeles *			Degree	12	2	Varies	B	Certificate
White Memorial Hospital, Los Angeles *	College of Medical Evangelists *	32 sem hrs	2 yrs	12	8	Aug	\$100	Certificate
Colls P. and Howard Huntington Memorial Hospital								
Mt. Zion			Degree	12	8	July	B	Certificate
Univ. of	University of California	..	Degree	12	5	Quart	None	Certificate
			3 yrs	12	15	Varies	None	Certificate

SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS—Continued

Name and Location of School	College Affiliation	College Credits Obtained at Hospital	Minimum Pre-requisite College Training	Length of Training in Months	Maximum Enrollment	Classes Begin	Tuition	Certificate, Diploma, Degree
COLORADO								
Colorado General Hospital, Denver ^a	University of Colorado.....	45 quart. hrs.	3 yrs.	12	16	Summer	\$200B	B. S. Certificate
Denver General Hospital, Denver.....	University of Denver.....	2 yrs.	2 yrs.	12	10	Varies	None	None
Mercy Hospital, Denver ^a	Loretto Heights College.....	45 quart. hrs.	3 yrs.	12	2	Quart.	U&B	None
St. Anthony's Hospital, Denver ^a	University of Denver.....	20 sem. hrs.	3 yrs.	12	2	Quart.	U&B	None
St. Joseph's Hospital, Denver.....	Loretto Heights College.....	45 quart. hrs.	2 yrs.	12	2	June	None	Certificate
CONNECTICUT								
New Britain General Hospital, New Britain.....	St. Mary College (Xavier, Kan.)..	None.....	Degree	12	6	July	None	Diploma
Waterbury Hospital, Waterbury.....	.....	.....	2 yrs.	12	2	Varies	\$75	Certificate
DISTRICT OF COLUMBIA								
Doctors Hospital, Washington.....	American University.....	18 sem. hrs.	2 yrs.	12	4	Quart.	None	Certificate
Garfield Memorial Hospital, Washington ^a.....	.....	.....	2 yrs.	12	6	Quart.	None	Certificate
George Washington Univ. Hosp., Washington.....	George Washington University.....	None.....	2 yrs.	12	6	Varies	None	Certificate
Providence Hospital, Washington.....	.....	.....	2 yrs.	12	6	Varies	None	Certificate
Sibley Memorial Hospital, Washington ^a	American University.....	18 sem. hrs.	2 yrs.	12	4	Quart.	None	Certificate
FLORIDA								
Florida State Hospital, Chattahoochee ^a	Florida State College for Women.....	30 sem. hrs.	2 yrs.	12	10	Varies	None	Dipl. & B.S.
James M. Jackson Memorial Hospital, Miami ^a.....	.....	.....	Degree	12	4	Varies	\$10	Certificate
GEORGIA								
Crawford W. Long Memorial Hospital, Atlanta.....	Emory University.....	None.....	2 yrs.	12	2	Varies	\$50	Certificate
Georgia Baptist Hospital, Atlanta.....	.....	.....	2 yrs.	12	2	Varies	\$50	Certificate
Grady Hospital, Atlanta.....	Emory University.....	None.....	Degree	12	12	Quart.	None	Certificate
Piedmont Hospital, Atlanta.....	.....	.....	Degree	12	6	Jan/June	None	Certificate
University Hospital, Augusta ^a	Univ. of Georgia School of Med....	None.....	2 yrs.	12	2	Sept	B	Certificate
Emory University Hospital, Emory University.....	Emory University School of Med....	None.....	2 yrs.	12	4	Quart.	None	Certificate
ILLINOIS								
City of Chicago Municipal Tuberculosis Sanitarium, Chicago ^a.....	.....	.....	2 yrs.	15	16	Quart.	B	Certificate
Michael Reese Hospital, Chicago.....	.....	.....	2 yrs.	12	14	Monthly	\$100	Certificate
Mt. Sinai Hospital, Chicago ^a.....	.....	.....	2 yrs.	12-18	15	Varies	\$170B	Diploma
Northwestern Univ. Medical School, Chicago.....	Northwestern Univ. Medical School	6 quart. hrs. ¹	2 yrs.	12	12	Monthly	\$50	Certificate
Provident Hospital, Chicago ^a.....	.....	.....	2 yrs.	12	5	Varies	\$100	Certificate
St. Bernard's Hospital, Chicago ^a.....	.....	.....	2 yrs.	12	10	Monthly	\$200B	Certificate
Truman Hospital, Evanston.....	.....	.....	Degree	12	4	Jan/July	\$50	Certificate
Francis Hospital, Evanston.....	.....	.....	2 yrs.	12	2	Varies	None	Certificate
Madison Hospital of Central Illinois, Peoria.....	.....	.....	2 yrs.	12	3	Varies	\$50B	Certificate
Francis Hospital, Peoria ^a.....	.....	.....	2 yrs.	12	7	Varies	\$100B	Diploma
Rockford Memorial Hospital, Rockford ^a.....	.....	.....	2 yrs.	12	3	Varies	B	None
Anthony's Hospital, Rockford ^a.....	.....	.....	2 yrs.	18	6	Varies	\$25	Certificate
St. John's Hospital, Springfield.....	.....	.....	2 yrs.	12	6	Sept	\$50	Certificate
St. Therese's Hospital, Waukegan.....	.....	.....	2 yrs.	12	4	Sept	\$100B	Diploma
INDIANA								
Indiana Univ. Medical Center, Indianapolis ^a	Indiana University.....	.....	2 yrs.	12	15	Varies	None	Dipl. & Degree
Methodist Hospital, Indianapolis.....	Butler University.....	30 sem. hrs.	2 yrs.	12	6	Varies	None	Certificate
St. Elizabeth's Hospital, Lafayette.....	.....	.....	2 yrs.	12	4	Varies	None	Diploma
South Bend Medical Laboratory, South Bend.....	.....	.....	2 yrs.	18	3	Jan/Sept	\$125	None
IOWA								
Mercy Hospital, Cedar Rapids.....	.....	.....	2 yrs.	12	2	Feb/July	None	Diploma
St. Luke's Methodist Hospital, Cedar Rapids ^a	Coe College.....	None.....	Degree	12-16	2	June	None	Certificate
St. Joseph Mercy Hospital, Sioux City.....	.....	.....	2 yrs.	12	2	Sept	B	None
KANSAS								
Bethany Hospital, Kansas City.....	.....	.....	2 yrs.	12	10	Varies	None	Certificate
Providence Hospital, Kansas City ^a.....	.....	.....	Degree	12	4	Jan/July	None	Certificate
University of Kansas Hospitals, Kansas City.....	Univ. of Kansas Graduate School	8 sem. hrs.	Degree	12-18	15	Varies	U	Certificate
St. Francis Hospital, Wichita.....	Municipal University of Wichita...	10 sem. hrs.	2 yrs.	12	12	Varies	\$150	Diploma
Wichita Hospital, Wichita ^a.....	.....	.....	2 yrs.	12	8	June/Sept	\$150B	Certificate
KENTUCKY								
Good Samaritan Hospital, Lexington ^{a,b}	University of Kentucky.....	51 quart. hrs.	3 yrs.	12	20	Quart.	U&B	B. S. Certificate
St. Joseph's Hospital, Lexington ^a	Nazareth College.....	18 sem. hrs.	2 yrs.	12	4	Varies	\$150B	None
Kentucky State Dept. of Health Laboratory, Louisville ^a.....	.....	.....	2 yrs.	12	50	Varies	\$300	Diploma
Norton Memorial Infirmary, Louisville ^a.....	.....	.....	2 yrs.	12	3	Varies	\$150	Certificate
St. Joseph Infirmary, Louisville.....	Nazareth College.....	18 sem. hrs.	3 1/2 yrs.	12	4	Sept	\$200	Cert. & B. S.
St. Mary and Elizabeth Hospital, Louisville ^a	Nazareth College.....	18 sem. hrs.	2 yrs.	12	6	July/Sept	\$120	Certificate
LOUISIANA								
Charity Hospital, New Orleans ^a.....	.....	.....	Degree	12	12	Monthly	None	None
Hotel Dieu Sisters Hospital, New Orleans ^a	Loyola University.....	None.....	3 yrs.	12	3	June/July	None	None
Mercy Hospital—Soniat Memorial, New Orleans ^a	Loyola University.....	None.....	Degree	12	2	Varies	None	None
T. E. Schumpert Memorial Sanit., Shreveport ^a.....	.....	.....	2 yrs.	12	3	Varies	\$50	Diploma
Shreveport Charity Hospital, Shreveport ^a.....	.....	.....	2 yrs.	12	4	Summer	None	None
MAINE								
Eastern Maine General Hospital, Bangor.....	University of Maine.....	30 sem. hrs.	2 yrs.	18	6	Varies	\$150B	Cert or Degree
Central Maine General Hospital, Lewiston.....	Colby College.....	30 sem. hrs.	3 yrs.	12	6	Quart.	\$100	Cert. & B.A.
Maine General Hospital, Portland.....	.....	.....	2 yrs.	12	4	Varies	B	Certificate
MARYLAND								
Mercy Hospital, Baltimore ^a.....	.....	.....	2 yrs.	18	16	Varies	\$200	Certificate
St. Joseph's Hospital, Baltimore.....	.....	.....	2 yrs.	12	6	Sept	B	None
MASSACHUSETTS								
Faulkner Hospital, Boston ^b	Simmons College.....	32 sem. hrs.	Degree	12	3	Jan/Sept	U	None
Massachusetts Memorial Hospital, Boston.....	.....	.....	2 yrs.	12	4	Quart.	None	Certificate
New England Hospital for Women and Children, Boston.....	.....	.....	Degree	12	2	July	B	Diploma
Salem Hospital, Salem.....	.....	.....	2 yrs.	12	10	Varies	None	Certificate
Mercy Hospital, Springfield.....	.....	.....	2 yrs.	12	4	July	None	Certificate
Taunton State Hospital, Taunton ^a.....	.....	.....	2 yrs.	12	2	Varies	None	Certificate
Tewksbury State Hospital and Infirmary, Tewksbury.....	.....	.....	2 yrs.	12	6	Varies	None	Diploma
Worcester City Hospital, Worcester.....	.....	.....	3 yrs.	12	4	Jan/July	None	Certificate
Worcester State Hospital, Worcester ^a.....	.....	.....	.....	.....	.....	.....	.....	.....
MICHIGAN								
University Hospital, Ann Arbor ^a	University of Michigan.....	48 sem. hrs.	3 yrs.	12	16	Varies	U&B	Cert. & B. S.
Leila Y. Post Montgomery Hosp., Battle Creek.....	.....	.....	Degree	12	3	Feb/June	B	Certificate
Mercy Hospital, Bay City ^a.....	.....	.....	2 yrs.	12	4	Quart.	\$100	Certificate
Chas. Godwin Jennings Hospital, Detroit ^{a,b}.....	.....	30 sem. hrs.	3 yrs.	12	2	Varies	U	B. S.
City of Detroit Receiving Hospital, Detroit.....	.....	30 sem. hrs.	2 yrs.	12	12	Varies	\$100	Certificate
Grace Hospital, Detroit.....	.....	30 sem. hrs.	3 yrs.	12	14	Varies	\$100B	Cert. & Dipl.

APPROVED SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS—Continued

Name and Location of School	College Affiliation	College Credits Obtained at Hospital	Minimum Pre- requisite College Training	Length of Train- ing in Months	Maximum Enrollment	Classes Begin	Tuition	Certificate, Diploma, Degree
Henry Ford Hospital, Detroit.....	Wayne University Graduate School	30 sem. hrs...	Degree	18	12	Varies	None	Dipl. & M. S.
Mt. Carmel Mercy Hospital, Detroit.....	Mercy College.....	None.....	2 yrs.	12	4	Jan/June	\$50	Diploma
Providence Hospital, Detroit.....	Wayne University.....	30 sem. hrs...	2 yrs.	12	12	Varies	\$100	Diploma
St. Mary's Hospital, Detroit ^b	Wayne University.....	30 sem. hrs...	3 yrs.	12	6	Varies	U	Diploma
Woman's Hospital, Detroit.....	Wayne Univ. and Mich. State Coll.	30 sem. hrs...	2 yrs.	12	10	Varies	\$100	Cert. & Degree
Eloise Hospital, Eloise.....	Wayne Univ., Univ. of Detroit, and Michigan State College.....	30 sem. hrs...	2 yrs.	12	7	Feb/July	None	Diploma
Hurley Hospital, Flint ^a	Michigan State College.....	50 quart. hrs.	3 yrs.	12	2	Jan/July	None	None
Blodgett Memorial Hospital, Grand Rapids ^a	Michigan State College.....	50 quart. hrs.	2 yrs.	12	4	Varies	None	Degree
Borgess Hospital, Kalamazoo.....	Michigan State College.....	50 quart. hrs.	2 yrs.	12	4	Varies	B	Certificate
Bronson Methodist Hospital, Kalamazoo.....	Western Mich. Coll. of Education	30 sem. hrs...	2 yrs.	12	2	Jan/July	B	Certificate
Edward W. Sparrow Hospital, Lansing.....	Michigan State College.....	50 quart. hrs.	3 yrs.	12	8	Varies	\$100	Dipl. & Degree
Michigan Department of Health Bureau of Laboratories, Lansing ^a	University of Michigan.....	Varies						
St. Lawrence Hospital, Lansing.....	Michigan State College ³	50 quart. hrs.	3 yrs.	12	30	Feb/July	B	None
Port Huron Hospital, Port Huron ^a	Michigan State College.....	50 quart. hrs.	3 yrs.	12	8	Varies	\$100	Dipl. & Degree
Wyandotte General Hospital, Wyandotte ^b	Wayne University.....	30 sem. hrs...	2 yrs.	12	4	Varies	B	Certificate
			3 yrs.	12	2	Varies	U	Dipl. & Degree
MINNESOTA								
St. Luke's Hospital, Duluth.....	Hamline University.....	38 sem. hrs...	2 yrs.	18	10	Varies	B	Degree
St. Mary's Hospital, Duluth ^b	College of St. Scholastica.....	20 sem. hrs...	3 yrs.	15	17	Feb/July	\$75B	Dipl. & B. S.
Minneapolis General Hospital, Minneapolis.....	University of Minnesota.....	46 quart. hrs.	B. S.	12	18	Varies	None	None
Northwestern Hospital, Minneapolis ^a		2 yrs.	12	5	July/Sept	B	Certificate	
Swedish Hospital, Minneapolis.....	Gustavus Adolphus College.....	16 sem. hrs...	2 yrs.	12	8	Varies	\$125	Cert & Degree
University Hospitals, Minneapolis ^{a,b}	University of Minnesota.....	46 quart. hrs.	3 yrs.	12	85	Varies	U&B	B. S.
Ancker Hospital, St. Paul ^b	University of Minnesota.....	46 quart. hrs.	B. S.	12	6	Varies	None	None
Charles T. Miller Hospital, St. Paul.....	Macalester College.....	20 sem. hrs...	3 yrs.	12	8	July	\$110	Dipl. & A. B.
MISSISSIPPI								
Mercy Hosp.—Street Memorial, Vicksburg ^a	Mississippi State College.....	12 sem. hrs...	2 yrs.	12	4	Varies	B	Cert. & B. S.
MISSOURI								
Kansas City General Hospital, Kansas City.....			2 yrs.	18	12	Jan/July	None	Certificate
Kansas City General Hosp. No. 2, Kansas City.....			2 yrs.	18	2	Varies	None	None
Menorah Hospital, Kansas City ^a			2 yrs.	12	12	Varies	None	None
Research Hospital, Kansas City.....			2 yrs.	12	10	Varies	None	Certificate
St. Joseph Hospital, Kansas City.....			Degree	12	15	Varies	B	Certificate
St. Luke's Hospital, Kansas City.....			2 yrs.	15	7	Varies	None	Certificate
St. Mary's Hospital, Kansas City.....			Degree	12	10	Summer	B	Certificate
Barnes Hospital, St. Louis.....	Washington Univ. School of Med.	None.....	2 yrs.	12	10	Quart.	\$50	Certificate
Firmen Desloge Hospital, St. Louis ^b	St. Louis University.....	25 sem. hrs...	3 yrs.	12	12	Feb/Sept	U	Degree
Homer G. Phillips Hospital, St. Louis ^a			2 yrs.	18	5	Varies	None	None
St. Anthony's Hospital, St. Louis ^b	Marquette Univ. (Milwaukee, Wis.)	64 sem. hrs...	2 yrs.	24	2	Varies	None	B. S.
St. Louis City Hospital, St. Louis.....			2 yrs.	15	8	Quart.	None	None
Burge Hospital, Springfield ^a	Drury College.....	30 sem. hrs...	2 yrs.	12	8	June	None	Dipl. & Degree
MONTANA								
Murray Hospital, Butte ^a	Montana State College and Univ. of Montana.....	45 quart. hrs.	3 yrs.	12	4	June	None	Degree
Columbus Hospital, Great Falls ^a	College of Great Falls.....	45 quart. hrs.	2 yrs.	12	4	Varies	None	Cert. & B. S.
NEBRASKA								
Bryan Memorial Hospital, Lincoln.....	Nebraska Wesleyan University....	27 sem. hrs...	2 yrs.	12	5	Varies	\$50B	Diploma
Lincoln General Hospital, Lincoln.....			2 yrs.	12	4	Varies	\$50	Diploma
Bishop Clarkson Memorial Hospital, Omaha.....			2 yrs.	12	3	Varies	\$75	Certificate
University of Nebraska Hospital, Omaha.....	Univ. of Nebraska College of Med.	None.....	2 yrs.	12	9	June/Aug	\$75	Certificate
NEW HAMPSHIRE								
Mary Hitchcock Memorial Hospital, Hanover.....			2 yrs.	12	8	Varies	B	Certificate
NEW JERSEY								
Newark Beth Israel Hospital, Newark ^a	Newark University.....	32 sem. hrs...	2 yrs.	12	10	Varies	U	Dipl. & Degree
Newark City Hospital, Newark ^a	New York University.....	16 sem. hrs...	2 yrs.	12	8	June	U	B. S.
Presbyterian Hospital, Newark ^a	New York University.....	16 sem. hrs...	2 yrs.	12	4	Varies	U	B. S.
St. Michael's Hospital, Newark.....			2 yrs.	12	3	Varies	\$150	Certificate
NEW YORK								
Bender Hygienic Laboratory, Albany ^a			2 yrs.	12	15	Varies	\$300	Certificate
Jewish Hospital, Brooklyn ^a			Degree	18	6	Quart.	None	Certificate
Prospect Heights Hospital, Brooklyn ^a			2 yrs.	12	3	Varies	None	Certificate
Buffalo General Hospital, Buffalo ^a		32 sem. hrs...	2-3 yrs.	12	13	Varies	\$50	Cert. or B.A.
Edward J. Meyer Memorial Hospital, Buffalo ^a		32 sem. hrs...	2-3 yrs.	18	10	Monthly	B	Cert. or B.A.
St. Joseph's Hospital, Elmira ^a			2 yrs.	12	6	Feb/Sept	\$50B	Certificate
Meadowbrook Hospital, Hempstead.....	Adelphi College.....	18 sem. hrs...	2 yrs.	18	3	Varies	None	Certificate
Mary Immaculate Hospital, Jamaica.....			2 yrs.	12	4	Varies	B	None
St. John's Long Island City Hospital, Long Island City ^a			Degree	12	3	Jan/July	None	Certificate
Beth Israel Hospital, New York City ^a	New York University.....	16 sem. hrs...	3 yrs.	12	8	June	U	B. S.
Montefiore Hospital for Chronic Diseases, New York City ^a	New York University.....	16 sem. hrs...	3 yrs.	12	4	June	U	B. S.
St. Luke's Hospital, New York City.....	New York University.....	16 sem. hrs...	Degree	18	12	Varies	\$200	Cert. & Dipl.
Rochester General Hospital, Rochester ^a	Elmira College.....	30 sem. hrs.						
Ellis Hospital, Schenectady ^a	Skidmore College.....	None.....	2 yrs.	12	8	Varies	\$75	Certificate
Samaritan Hospital, Troy.....	Russell Sage College.....	30 sem. hrs...	3 yrs.	12	3	Varies	U	Dipl. & B. S.
Grasslands Hospital, Valhalla ^{a,b}	New York University.....	16 sem. hrs...	3 yrs.	12	2	July	U	B. S.
NORTH CAROLINA								
Charlotte Memorial Hospital, Charlotte.....	Queens College.....	30 sem. hrs...	2 yrs.	18	3	Varies	B	None
Duke Hospital, Durham ^a	Duke University.....	None.....	2 yrs.	18	25	Quart.	B	Certificate
Watts Hospital, Durham.....	University of North Carolina.....	None.....	2 yrs.	12	7	Jan/July	B	Certificate
North Carolina Baptist Hosp., Winston-Salem	Salem College.....	30 sem. hrs...	2 yrs.	12	4	Varies	\$65	Certificate
NORTH DAKOTA								
Trinity Hospital, Minot.....			2 yrs.	12	6	Sept	B	None
OHIO								
City Hospital ^a Akron.....			2 yrs.	12	4	Varies	None	Certificate
St. Thomas.....			2 yrs.	12	3	July/Oct	None	Certificate
Good Samaritan.....	Coll. of Mt. St. Joseph-on-the-Ohio	24 sem. hrs...	3 yrs.	12	4	Sept	\$250B	Cert. & Degree
Mt. Sinai Hospital, Cleveland.....	Western Reserve University.....	18 sem. hrs...	2 yrs.	12	12	July/Sept	\$250B	Certificate
University Hospital, Cleveland ^a	Flora Stone Mather College.....	18 sem. hrs...	2 yrs.	12	17	Summer	\$100	Cert. & Degree
Mt. Carmel Hospital, Cincinnati.....	Ohio University.....	16 sem. hrs...	2 yrs.	12	8	Varies	U	Cert. & Degree
Starling-Lovin.....	Ohio State University.....	None.....	2 yrs.	12	12	Quart.	U	Certificate
Huron Road.....			2 yrs.	12	9	Jan/July	\$100	Certificate
Mercy Hospital, Toledo ^a		29 sem. hrs...	2 yrs.	12	6	Jan/Sept	\$50	Certificate
		None.....						
St. Vincent's Hospital, Toledo ^a		29 sem. hrs...	3 yrs.	12	4	Feb/July	B	Certificate
Toledo Hospital, Toledo.....	University of Toledo.....	29 sem. hrs...	3 yrs.	12	6	Feb/Sept	B	Certificate
Youngstown Hospital, Youngstown.....			2 yrs.	12	8	Jan/Sept	None	Certificate

APPROVED SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS—Continued

Name and Location of School	College Affiliation	College Credit Obtained at Hospital	Minimum Pre- requisite College Training	Length of Train- ing in Months	Maximum Enrollment	Classes Begin	Tuition	Certificate, Diploma, Degree
OKLAHOMA								
St. Anthony's Hospital, Oklahoma City.....	Univ. of Oklahoma School of Med.	None.....	2 yrs.	12	5	Varies	None	None
University Hospitals, Oklahoma City.....	University of Tulsa.....	21 sem. hrs...	Degree	12	6	Quart.	None	None
St. John's Hospital, Tulsa.....	University of Tulsa.....	21 sem. hrs...	2 yrs.	12	6	Varies	None	Certificate
OREGON								
Emmanuel Hospital, Portland.....	.....	.....	2 yrs.	12	2	Varies	\$150	Certificate
Good Samaritan Hospital, Portland.....	.....	.....	2 yrs.	12	4	Varies	None	None
Portland Sanitarium and Hospital, Portland.....	.....	.....	2 yrs.	12	3	JanJuly	None	Certificate
St. Vincent's Hospital, Portland.....	.....	.....	2 yrs.	12	4	Varies	None	None
University of Oregon Medical School Hospitals and Clinics, Portland.....	University of Oregon Med. School	None.....	2 yrs.	12	11	Varies	None	None
PENNSYLVANIA								
Abington Memorial Hospital, Abington.....	.....	.....	2 yrs.	15	7	Varies	None	Certificate
Allentown Hospital, Allentown.....	Moravian College for Women.....	24 sem. hrs...	2 yrs.	12	2	June	\$75	None
Sacred Heart Hospital, Allentown.....	Moravian College for Women.....	24 sem. hrs...	3 yrs.	12	6	Varies	\$75	Certificate
St. Luke's Hospital, Bethlehem.....	Moravian College for Women.....	24 sem. hrs...	2 yrs.	12	4	Varies	\$75	Certificate
Bryn Mawr Hospital, Bryn Mawr.....	.....	.....	2 yrs.	15	6	Quart.	B	Certificate
Geo. F. Geisinger Memorial Hospital, Danville	Bucknell University.....	14 sem. hrs...	2 yrs.	12	6	FebJuly	U	B. S. or M. S.
Fitzgerald-Mercy Hospital, Darby.....	.....	.....	Degree	12	4	Varies	B	Certificate
Easton Hospital, Easton.....	Moravian College for Women.....	24 sem. hrs...	3 yrs.	12	5	July	None	Degree
Harrisburg Hospital, Harrisburg.....	.....	.....	2 yrs.	12	10	Quart.	None	Certificate
Mercy Hospital, Johnstown.....	.....	.....	2 yrs.	12	2	June	None	Certificate
Germantown Dispensary and Hosp., Philadelphia	.....	.....	2 yrs.	12	5	Varies	\$100	Certificate
Jefferson Medical College Hospital, Philadelphia	Jefferson Medical College.....	None.....	2 yrs.	12	12	Sept	\$160B	Certificate
Lankenau Hospital, Philadelphia.....	.....	.....	2 yrs.	12	3	FebSept	\$50	Certificate
Mt. Sinai Hospital, Philadelphia.....	.....	.....	2 yrs.	18	3	Varies	\$150B	Certificate
Philadelphia General Hospital, Philadelphia.....	Pennsylvania State College.....	None.....	2 yrs.	12	23	Varies	None	Certificate
St. Arnes Hospital, Philadelphia.....	.....	.....	2 yrs.	12	5	Varies	B	Certificate
St. Joseph's Hospital, Philadelphia.....	.....	.....	2 yrs.	12	3	Sept	\$120B	Certificate
Temple University Hospital, Philadelphia.....	Temple University.....	60 sem. hrs...	2 yrs.	24	20	Monthly	U	Cert. & B. S.
Montefiore Hospital, Pittsburgh.....	.....	.....	2 yrs.	12	6	June	B	Certificate
Reading Hospital, Reading.....	Albright College.....	16 sem. hrs...	2 yrs.	12	4	Sept	\$150	B. S.
St. Joseph's Hospital, Reading.....	.....	.....	2 yrs.	12	4	Sept	\$150	Certificate
Moses Taylor Hospital, Scranton.....	.....	.....	2 yrs.	12	6	Varies	None	Certificate
Scranton State Hospital, Scranton.....	.....	.....	2 yrs.	12	8	Varies	None	Certificate
Wilkes-Barre General Hospital, Wilkes-Barre.....	.....	.....	2 yrs.	12	4	Summer	None	Certificate
Williamsport Hospital, Williamsport.....	Bucknell University.....	11 sem. hrs...	2 yrs.	12	3	Varies	U	Cert & Degree
SOUTH CAROLINA								
Medical College of the State of South Carolina, Charleston.....	Med. Coll. of State of So. Carolina	None.....	2 yrs.	18	12	Varies	B	Certificate
TENNESSEE								
Snookville General Hospital, Knoxville.....	.....	.....	2 yrs.	12	4	JulyDec	B	Diploma
John Gaston Hospital, Memphis.....	Univ. of Tennessee Coll. of Med...	None.....	2 yrs.	15	8	Quart.	None	Certificate
St. Joseph's Hospital, Memphis.....	.....	.....	2 yrs.	15	10	Varies	B	Certificate
Geo. W. Hubbard Hospital, Nashville.....	Moharry Medical College.....	None.....	2 yrs.	18	10	Varies	\$105	Certificate
Nashville General Hospital, Nashville.....	.....	.....	2 yrs.	12	4	Varies	None	Certificate
TEXAS								
Brackenridge Hospital, Austin.....	University of Texas.....	.....	3 yrs.	12	4	FebAug	None	None
Hotel Dieu Hospital, Beaumont.....	.....	.....	2 yrs.	18	4	Varies	B	Diploma
Baylor University Hospital, Dallas.....	Baylor University.....	.....	2 yrs.	13	18	FebJuly	\$100	Certificate
Harris Memorial Methodist Hosp., Ft. Worth.....	Texas Christian University.....	39 sem. hrs...	3 yrs.	12	8	MarNov	U	B. S.
John Sealy Hospital, Galveston.....	Univ. of Texas School of Med...	None.....	2 yrs.	12	16	Quart.	U&B	Certificate
Jefferson Davis Hospital, Houston.....	University of Houston.....	30 sem. hrs...	2 yrs.	12	12	Monthly	\$50	Certificate
Med. and Surg. Memorial Hosp., San Antonio.....	.....	.....	2 yrs.	12	4	Varies	None	Certificate
Robt. B. Green Memorial Hosp., San Antonio.....	.....	.....	2 yrs.	12	6	Varies	\$100	Certificate
UTAH								
Thomas D. Dee Memorial Hospital, Ogden.....	University of Utah.....	45 quart. hrs.	3 yrs.	12	4	June	U	Certificate
Dr. W. H. Groves Latter-Day Saints Hospital, Salt Lake City.....	University of Utah.....	45 quart. hrs.	3 yrs.	12	2	Varies	U	Degree
Holy Cross Hospital, Salt Lake City.....	University of Utah.....	45 quart. hrs.	3 yrs.	12	4	Varies	None	Degree
St. Mark's Hospital, Salt Lake City.....	University of Utah.....	45 quart. hrs.	3 yrs.	12	4	JuneSept	None	Degree
Salt Lake County General Hospital, Salt Lake City.....	University of Utah.....	45 quart. hrs.	3 yrs.	12	6	June	None	Degree
VERMONT								
University of Vermont College of Medicine, Burlington.....	University of Vermont.....	30 sem. hrs...	3 yrs.	12	4	Varies	U	B. S.
VIRGINIA								
University of Virginia Hosp., Charlottesville.....	.....	.....	2 yrs.	12	12	Sept	B	None
Hospital of St. Vincent de Paul, Norfolk.....	.....	.....	2 yrs.	18	5	Varies	\$90B	Certificate
Medical College of Virginia Hospital Division, Richmond.....	Medical College of Virginia.....	None.....	2 yrs.	18	14	Varies	\$150	Certificate
Stuart Circle Hospital, Richmond.....	Richmond Professional Institute..	30 sem. hrs...	3 yrs.	12	6	Varies	B	Cert & Degree
WASHINGTON								
King County Hospital, Seattle.....	.....	.....	2 yrs.	12	10	Varies	None	None
Providence Hospital, Seattle.....	Seattle College.....	45 quart. hrs.	3 yrs.	12	6	Varies	None	Certificate
Donness Hospital, Spokane.....	University of Idaho.....	12 sem. hrs...	3 yrs.	12	6	Varies	None	Diploma
Sacred Heart Hospital, Spokane.....	.....	.....	2 yrs.	12	4	Varies	None	Certificate
St. Luke's Hospital, Spokane.....	State Coll. of Washington.....	16 sem. hrs...	2 yrs.	12	8	FebSept	\$40	Certificate
St. Joseph's Hospital, Tacoma.....	Seattle College.....	45 quart. hrs.	2 yrs.	18	4	AprSept	\$45	Cert. & B. S.
Tacoma General Hospital, Tacoma.....	.....	.....	2 yrs.	12	4	Varies	None	Certificate
WISCONSIN								
St. Francis Hospital, La Crosse.....	.....	.....	2 yrs.	12-18	4	Varies	\$30	Certificate
Madison General Hospital, Madison.....	.....	.....	Degree	12	4	Oct	None	Certificate
St. Mary's Hospital, Madison.....	Mount Mary College.....	32 sem. hrs...	2 yrs.	18	9	Quart.	\$25	Diploma
State of Wisconsin General Hosp., Madison.....	University of Wisconsin.....	31 sem. hrs...	3 yrs.	12	15	Sept	U	Dipl. & B. S.
Milwaukee County Hospital, Milwaukee.....	.....	.....	2 yrs.	24	5	June	None	Certificate
Milwaukee Hospital, Milwaukee.....	.....	.....	2 yrs.	12	5	Sept	\$50B	Certificate
Mt. Sinai Hospital, Milwaukee.....	.....	.....	2 yrs.	24	2	Varies	\$240	Certificate
St. Joseph's Hospital, Milwaukee.....	Marquette University.....	64 sem. hrs...	2 yrs.	24	4	June	None	Degree

- a. Male students are admitted.
b. Only students from affiliated college admitted.
1. Students in eighteen-month course leading to M.S. degree allowed thirty-six quarter hours; entrance requirements—B.S. degree; tuition, \$100.
2. Students enrolling in four-year degree course are allowed twenty-

- five semester hours for final year spent in hospital; these students pay regular university fees.
3. Additional affiliations include: Western Mich. Coll. of Education (30 sem. hrs.) and Central Mich. College of Education (32 sem. hrs.).
4. Students with degree admitted to twelve-month course.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 25, 1944

HOSPITAL SERVICE IN THE UNITED STATES

In war as in peace the hospitals of the United States continue to render faithful and efficient service to the sick and injured of the nation. The tremendous task they assume under wartime conditions is illustrated in the annual hospital report of the Council on Medical Education and Hospitals published in this issue of THE JOURNAL. The number of patients admitted in 1943 reached the unprecedented total of 15,374,698, as compared with 12,545,610 in 1942. In addition there were 1,924,591 hospital births, an increase of 253,992 over the previous year. Similarly the daily patient load or average census increased by 131,096, not counting newborn infants. Equally impressive is the expansion of hospital beds from 1,383,827 in 1942 to 1,649,254 in 1943. This increase of 265,427 beds is the equivalent of a new 727 bed hospital for each day of the year. When this recent growth is compared with the average annual increase of 25,000 to 30,000 beds in the twenty year period that preceded the war, the extent to which hospital facilities have been developed in relation to wartime needs may be better appreciated.

The greatest gain has naturally occurred in the federal group, whose admissions increased by 2,356,885 in the last year. Significantly the state, county and municipal hospitals showed a decrease of 103,733, while the non-governmental group comprising the church related institutions, other nonprofit associations and the proprietary hospitals had a substantial increase of 575,936. Although several factors may be involved, the influence of improved economic conditions is clearly evident in the changes that have occurred in the nonfederal hospital groups. The general hospitals constitute the largest division in the classification of hospitals according to type of service. They have 51 per cent of the bed capacity but received 94 per cent of all patients admitted in 1943. Their participation in the recent expansion of hospital service can be measured by an increase of 2,820,350 admissions during the year.

The average length of stay in the general hospitals was identical with that reported in 1942 except in the federal, state and city-county groups, which showed reductions of one to two days. The average in the governmental hospitals, however, remained at nineteen days as in the previous year because of the large increase of patients in the federal group, in which the longest stay occurred. In the nongovernmental general hospitals the patients had an average stay of ten days. There was a decrease in the percentage of bed occupancy in the federal and general hospitals. This reduction in the face of a greatly increased admission rate is primarily the result of a rapid expansion of federal hospital facilities in anticipation of future needs. The occupancy rate in these institutions therefore has not kept pace with the number of beds available for hospital care.

A special feature this year is a study of hospital facilities available for the segregation and care of contagious diseases throughout the country. This includes not only the isolation hospitals but also the units maintained by other institutions for regular isolation service or temporary hospitalization of patients awaiting transfer to other contagious disease departments. Reports are also included regarding schools of nursing education and administrative, nursing and technical personnel in all hospitals. While these show the number of individuals employed in each classification, they do not indicate the turnover of personnel or the difficulty that many hospitals experience in obtaining the required number of trained workers to maintain essential hospital functions.

Attention is called to the extraordinary completeness of the present report in relation both to civilian and to military hospitals. Information as required for tabulation purposes and the hospital list was received from nearly 99 per cent of the 6,655 hospitals now registered by the American Medical Association. For reasons of military security many of the newly established hospitals in the federal group are not listed in the Register; they are, however, included in the tabular and statistical data published by the Council. Grateful acknowledgment and appreciation are extended to all who cooperated in making this report possible. The hospitals which supplied information to the Council have also been of service to the country at large, for the annual hospital reports of the American Medical Association have become increasingly valuable in relation to wartime needs and are widely utilized by federal agencies, civilian groups and individuals concerned with hospital activities and allied services.

Many of the hospitals have rendered increased service while operating with reduced staffs of physicians, house officers, nurses, technicians and general and special service personnel. Their accomplishment in the face of these difficulties reflects not only a high degree of

standardization but also the initiative, pride of occupation, loyal cooperation and devotion of those who serve the sick. By careful administrative management, coordination of services and skillful utilization of available facilities and personnel the increased demands of the wartime period have been met.

SECRETION OF A GLUCOSE OXIDIZING ENZYME WITH BACTERIOSTATIC PROPERTY BY *PENICILLIUM NOTATUM*

In 1936 Hirsch described a method of measuring the respiration of bacterial aerobic cultures; this enabled him to follow the course of the bacterial growth and also to gage bacteriostatic and bactericidal actions without resorting to subculturing. He and his collaborators, working in the Institute of Hygiene of the University of Istanbul, were able in 1942 to throw some light, by the use of this method, on the antibacterial action of the sulfonamides. Applying a similar method to a study of the bacteriostatic effect of penicillin, they demonstrated¹ that the penicillin secreting strain of *Penicillium notatum* (Fleming) spontaneously produces a glucose oxidizing enzyme with antibacterial properties. This enzyme is promptly inactivated at 100 C.

The enzyme can be extracted from the culture filtrate with benzoic acid. It acts on dextrose only and not on any other carbohydrate or carbon compound. One-half mol of oxygen is consumed in oxidation of 1 molecule of glucose. Oxidation of glucose takes place without splitting off carbon dioxide, the final product of oxidation being gluconic acid. By the action of a dialyzed culture filtrate, 22 Gm. of calcium gluconate is obtained from 20 Gm. of glucose (92 per cent of the theoretical amount). The optimal hydrogen ion concentration of the enzymatic activity is shifted with progressive transformation from a p_H of 5.5 to a p_H of 6.5. The enzyme is still active at 25 C. The optimal temperature for its activity has not thus far been determined. The activity of the enzyme is increased by alpha amino acids, in particular by diamino acids, by peptones and proteins and also by gelatin, insulin and bacterial proteins.

The enzyme seems to be identical with the widely distributed fungus enzyme (glucose oxydase) which Miller obtained under high pressure from *Penicillium glaucum* and *Aspergillus niger*. The spontaneous secretion of the enzyme has so far been observed only in *Penicillium notatum*. The secretion of the enzyme is accelerated with increasing concentration of a phosphate buffer in the nutrient medium of the fungus. Considerable enzyme secretion begins in the presence of one-

tenth molar phosphate buffer (p_H 6.4) on about the fifth day and reaches its peak on the eighth or ninth day. The myceliums of *Penicillium notatum* of Westling and of *Penicillium glaucum* do not produce an enzyme under the same conditions.

The antibacterial action of the enzyme discovered by Hirsch depends on the presence of glucose and oxygen; in other words, the action depends not on the substance of the enzyme but on the enzymatic reaction of the glucose oxidation. The active enzyme is effective against *Staphylococcus aureus* but not against *Escherichia coli*. The respiration of "resting" staphylococci is not reduced by the enzyme, and a bactericidal effect cannot be demonstrated. However, the enzyme manifests a pronounced bacteriostatic effect. With moderate enzymatic activity the rate of the increase in the numbers of staphylococci is affected.

INTERNSHIPS IN WARTIME

Under the 9-9-9 program of the Procurement and Assignment Service to meet military needs, the hospital internship has been reduced to nine months. Although changes in organization of training programs have naturally occurred, the internship continues to provide basic preparation for general practice, specialization, military medicine or other medical activities.

Every effort is being made to maintain a high level of educational performance. The reduction in length of internship, therefore, imposes a greater responsibility on hospitals to insure that the limited period of training will be productive of maximum educational value. First, the internship must continue to be viewed primarily as an educational function and not mainly as a personnel problem in relation to institutional service. With the present shortage of personnel of all kinds, hospitals and medical staffs must guard carefully against any tendency to exploit interns in noneducational duties. Economy in the use of house officers is of the utmost importance. Any assignment, therefore, which does not contribute materially to the training program should be eliminated, so that the intern's time may be devoted to essential hospital and educational needs.

The internship is fundamentally an educational service. In this service theoretical knowledge is translated into practical experience under the guidance of a competent hospital staff. Successful organization requires careful administrative planning, thorough analysis of individual assignments, readjustments of schedules and case loads as necessary, and effective bedside teaching. When a hospital is functioning with a shortage of house officers, clinical assignments need to be kept within such limits as will insure efficient medical care, sound educational service and adequate protection of the intern's health. Excessive case loads in which interns

1. Hirsch, Julius: Die Sekretion eines Glukose-oxydierenden Enzyms mit bakteriostatischer Wirkung durch *Penicillium notatum* Fleming, Istanbul Seririyati 25, No. 8, 1943.

are submerged in a multiplicity of routine procedures will seriously impair the quality of instruction.

From recent reports it is apparent that the loss of medical personnel and the reduction in house staffs have affected the ability of some hospitals to maintain a satisfactory program for necropsies. In view of the importance of pathologic studies in relation to intern education it is strongly urged that hospitals with low necropsy rates immediately exert every effort to obtain sufficient material for instruction. The ratio of necropsies, it should be noted, has long been considered a reliable index of the quality of educational service in hospitals.

In the final analysis the success of an intern training program depends on the cooperation of the medical staff and the willingness and ability of individual physicians to carry the added burden of teaching as their contribution to medical education and the future of American medicine.

Current Comment

TECHNICAL PERSONNEL IN MEDICAL SERVICE

Attention has been focused on the need for technical personnel in hospitals, clinics and physicians' offices. To conserve the time of physicians who remain in practice, hospitals and clinics are attempting to acquire an increased number of skilled assistants. The situation is complicated by the need of the armed forces for many of these workers. The present requirements of the armed forces for additional technical personnel include 20 per cent of the qualified dietitians, 60 per cent of the qualified physical therapists and over 60 per cent of the qualified occupational therapists. Several hospitals report that they do not have their normal quota of experienced technicians and are forced to limit the work of their departments. The number of unfilled positions in civilian hospitals that require qualified technical personnel approximates one twelfth the number of dietitians, one fifth of the occupational therapists and perhaps a similar proportion of physical therapists and medical record librarians. To meet these requirements it is apparently necessary to train enough technicians to equal large percentages of present qualified personnel. The requirements amount to over 80 per cent of present occupational therapists, 80 per cent of present physical therapists, 28 per cent of present dietitians and over 20 per cent of present medical record librarians. Data on the technical personnel in hospitals can be found on pages 849 and 916 to 922 of this issue of *THE JOURNAL*. Here it may be noted that 50,326 specially trained personnel were engaged in 1941, 61,181 in 1942 and 73,174 in 1943. Many of these, it is recognized, have not received a complete course of training and must necessarily work under the supervision of others who are fully qualified in these fields. Further

efforts are necessary to increase the supply of technical workers for civilian and military hospitals. Rehabilitation will create additional demands. When the war is won and physicians return to resume their places on the staffs of civilian hospitals there will be requests to enlarge or create new departments of physical therapy, occupational therapy and so on because of the importance of these forms of treatment, especially in army hospitals. Hospitals that can function as training centers for technical personnel are urged to do so. The Council on Medical Education and Hospitals of the American Medical Association has outlined minimum essentials for the approval of schools for clinical laboratory technicians, physical therapists, occupational therapists and medical record librarians. The essentials for x-ray technician schools are being prepared.

SUCCESSFUL TREATMENT OF CARBON TETRACHLORIDE POISONING

Millions of pounds of carbon tetrachloride are used annually in this country, and cases of poisoning are not rare. Therapy has not been notably successful. A promising new treatment now comes from the combined efforts of physicians at a United States Military Hospital, E. T. O., and the Bernhard Baron Research Laboratories, Royal College of Surgeons of England.¹ The report is based on a single case of absorbing interest which concerned an army air force pilot who accidentally ingested a large quantity of carbon tetrachloride. The report notes that the maximum therapeutic dose is 4 cc. but that fatalities have been reported with doses as low as 1.4 cc. In the case reported the amount swallowed was 30 to 40 cc. and the indication was that the drug was completely absorbed, the immediate onset of symptoms indicating a rapid entry into the circulation. Vomiting in this case was not induced until forty-five minutes after ingestion. Enlargement of the liver with the edge palpable 2 inches below the costal margin in the right anterior axillary line was demonstrable some nineteen hours after the carbon tetrachloride had been swallowed. About twenty hours after the ingestion the patient was given 2 Gm. of *D,L*-methionine by mouth. This was retained, and three hours later 1 cc. of a casein-digest-methionine solution was injected slowly into an antecubital vein. Since this was not followed by any immediate reaction, 5 cc. more was injected, also without reaction. Continuous infusion of the solution by a drip apparatus was then begun, the rate of infusion being about 2 cc. per minute. By the end of the next three hours, when 436 cc. of the solution had been infused, the patient complained of chilliness, intense headache and backache, and some aching of the limb muscles. The infusion was then stopped. The liver at this time was still tender and had enlarged considerably; the edge, which was rounded, had reached the umbilicus at the midline. The next

1. Beattie, J.; Herbert, P. H.; Wechtel, C., and Steele, C. W.: Studies on Hepatic Dysfunction: I. Carbon Tetrachloride Poisoning Treated with Casein Digest and Methionine, *Brit. M. J.* 1: 209 (Feb. 12) 1944.

U. S. ARMY TRANSPORT ERNEST HINDS DESIGNATED AS ARMY HOSPITAL SHIP

The United States Army transport *Ernest Hinds* was designated as a United States Army hospital ship January 3, in accordance with international practice, as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Ernest Hinds* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered through channels to the Hungarian and Rumanian governments on January 17, to the German, Japanese and Thai governments on January 18 and to the Bulgarian government on February 4.

SUPER RED CROSS MARKER FOR STATION AND GENERAL HOSPITALS

The Army Medical Department has developed a new super red cross canvas marker measuring 100 feet by 100 feet for use by station and general hospitals in combat zones, the War Department announced recently. The huge marker is plainly recognizable from a height of 25,000 feet. It is made of heavy canvas and will withstand all types of weather. Special attachments provide for anchoring it firmly to the ground. It is being manufactured by the Quartermaster Corps at Jeffersonville, Ind., depot and was developed at the direction of Major Gen. Norman T. Kirk, Surgeon General, U. S. Army.

The Army Medical Department now uses a canvas removable type red cross marker to designate hospital tents in combat

areas. The marker measures 21 feet 6 inches by 9 feet 6 inches and has two crosses, each 8 feet square, so that when it is thrown across the sloping tops of hospital tents the large red cross marking can be seen from any angle to designate the tent as a hospital tent. It attaches easily to the tent ropes and can be put in place or removed quickly. This marker will continue to be used to designate the smaller hospital tents, while the large 100 foot red cross is to be used for station and general hospitals only.

ARMY PERSONALS

The post commander at Fort Knox, Kentucky, recently announced the promotion of Leonard Long, formerly of Bluffton, Ind., from captain to major in the Medical Corps of the Army of the United States. Dr. Long is the chief of x-ray service at the station hospital at Fort Knox. He graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1932 and entered the service July 13, 1941.

Dr. Thomas M. Fullenlove, formerly of San Francisco, flight surgeon attending the Mustang pilots who initiated the new long range fighter in combat over Europe, was recently promoted from captain to major, according to an announcement by the Mustang headquarters in England. Dr. Fullenlove graduated from the University of Louisville School of Medicine (Ky.) in 1934. After entering the service in June 1942 he attended the School of Aviation Medicine at Randolph Field, Texas. He accompanied the Mustang group overseas and has been flight surgeon on combat status since the group went into action Dec. 1, 1943.

MISCELLANEOUS

EMERGENCY MATERNITY AND INFANT CARE

A Message from the Surgeons General of the Army and Navy to the Physicians of the United States

On March 18, 1944 the Emergency Maternity and Infant Care program for the wives and infants of enlisted men in the four lowest pay grades of the armed forces of the United States will have completed its first year. Approximately a quarter of a million wives and infants will have been given care under the program. More than 90 per cent of this number are wives of enlisted men; nearly 10 per cent are their newborn infants. Medical, nursing and hospital care is being made available in army and navy installations where it does not interfere with the care of the soldier and where it can be given without increasing existing facilities. Whatever other care is available in the place where the wife and infant are living is being given through the civilian authorities.

Physicians the country over are contributing their medical skill to this wartime program generously and in return for moderate recompense. Hospitals the country over have opened their doors to these wives and their infants making available accommodations where their medical needs can be met adequately, though without luxury care. Nurses the country over are helping in the city and the rural homes and in the hospitals.

All this is being carried out voluntarily by those who are participating in the program. All this is being done in spite of the great shortage of physicians and nurses serving the civilian population—a shortage caused by the entry into the armed forces of thousands of our physicians and nurses.

This program of maternity and infant care for wives and infants of enlisted men is made possible by grants from the federal government through the Children's Bureau of the Department of Labor and the state health agencies for the purpose of relieving anxiety among the enlisted men as to how the costs of maternity care for their wives, or the costs of medical care for their infants, will be met in their absence from home while in the armed forces—when, for a great majority, their family income has been lowered materially. The program carried out by the state health agencies brings assurance to the enlisted men that their national and state governments are doing whatever is in their power to make care available to

their wives and infants, that physicians throughout the country are helping.

The morale in the armed forces is being raised and our fighting men go overseas with greater confidence in the security of their families because of this wartime program.

We who are responsible for the health and medical care of the men in the armed forces are grateful to you—physicians, nurses and hospitals—who are participating in this program of care of the wives and infants of these men. You are sharing with us our normal peacetime responsibility of caring for the families of our men and so are making it possible for us to give our best efforts to the men themselves.

Your contribution is an invaluable aid to us in the prosecution of the war, and we count on your carrying this program forward in the year to come with the same generous spirit you have shown in the past year.

ROSS T. McINTIRE,

NORMAN T. KIRK,

Vice Admiral, M. C., U. S. N., Major General, U. S. Army,
The Surgeon General of the Navy. The Surgeon General.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, March 18, p. 783)

ILLINOIS

Ravenswood Hospital, Chicago. Capacity, 163; admissions, 5,812.
George Swanson, Superintendent (interns—October 1).

IOWA

Mercy Hospital, Cedar Rapids. Capacity, 147; admissions, 3,862.
Sister Mary Mercy, R.N., Superintendent (2 residents, 1 intern).

OHIO

Aultman Hospital, Canton. Capacity, 150; admissions, 6,332. James W. Stephan, Director (interns).

TEXAS

Methodist Hospital of Dallas, Dallas. Capacity, 176; admissions, 7,387;
Cicero B. Fielder, Administrator (1 resident—August 15).

**REPORT MADE BY SPECIAL FIVE MAN
MEDICAL COMMISSION**

The commission of five physicians (THE JOURNAL, January 15, p. 166) appointed by the President Dec. 30, 1943 to study the requirements of personnel for admission to the armed services presented its report recently. It obtained factual data, comments and opinions regarding numbers of men potentially available for induction, the numerical needs of the armed services for manpower, the rates and causes for rejection under the present requirements for admission, the type of duty for which men are needed by the armed services and the possible effect of the current requirements for admission on claims for postservice benefits from approximate civilian and military agencies of the government and examined the requirements for admission to the Army, Navy and Marine Corps in the light of this information, reaching the following conclusions:

1. The physical requirements for admission to the armed services cannot be reduced below those contained in appendix III without impairing the efficiency of these services.

2. The services have reached saturation for newly inducted men for limited service, since the need for men in this category will be fully met by men already in service who as a result of incidents of the service are no longer fit for general service.

3. It is evident that the urgent and increasing need of the services today is for men for general service and that this need will progressively increase until the war is successfully concluded.

Distribution of Registrants Ages 18-37 as of Dec. 1, 1943

Total living registrants.....	22,138,000
In the armed forces (inducted).....	6,540,000
In the armed forces (enlisted).....	2,430,000
Disqualified after physical examination.....	3,357,000
* In process of classification, examination or induction	1,090,000
Deferred, occupational reasons.....	3,834,000
Deferred, dependency reasons.....	4,645,000
Deferred, other reasons.....	152,000
Unclassified and unknown.....	90,000

* This group includes 43,000 men who have been found qualified for induction for limited service under present requirements but whose services have not been required by the armed forces in this status.

4. It is apparent that these needs cannot be met by lowering the physical requirements for admission to the armed forces or by increasing the induction of men for limited service.

5. In view of the needs of the armed services for men qualified for general service, which needs cannot be fully met from the pool of men now on hand in class 1-A plus the annual increment of men coming of military age, it is apparent that the manpower required for the prosecution of the war cannot be obtained except by induction of men living with their families and recourse to all other available sources.

The director of the Selective Service System presented the rates and causes for rejection under the current requirements for admission to the armed services as shown in the table.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced for March 29, 30 and 31 at Bruns General Hospital, Santa Fe, N. M. They include the following speakers and subjects:

Discussion of Shoulder Disabilities, Dr. Atha Thomas.

Certain Phases of the Problem of Bowel Obstruction, Dr. Owen H. Wangenstein.

Symposium on Peripheral and Disseminated Vascular Disease, Drs. N. W. Barker, Alton Ochsner and Paul Klemperer.

Tropical Medicine, Dr. E. R. Murgage.

Psychosomatic Medicine, Dr. Karl Menninger.

Neurologic Conditions, Dr. Rudolph Jaeger and Dr. Atha Thomas.

Problems in Rheumatic Fever, Dr. A. W. Harris and Col. J. E. Benjamin.

Renal Disease, Dr. Thomas Addis and Dr. H. T. Low.

Others on the program are Major F. J. Fischer, Lieut. Col. J. D. Koucky, Lieut. Col. G. J. Kastlin, Lieut. Col. C. W.

Irish, Major H. E. Schmidt, Capt. F. J. Putney, Capt. E. P. Hausner, Major F. L. Larkin and Major S. I. Kooperstein. Brig. Gen. Larry B. McAfee, commanding general of the hospital, will give the address of welcome.

**AMERICAN RED CROSS TO SEND
AID TO LITHUANIA**

Medical and hospital relief supplies valued at \$10,000 are being prepared by the American Red Cross for shipment to Lithuania, it was announced recently by Norman H. Davis, chairman. This shipment, in response to needs verified by neutral observers, will go forward to the Baltic country as soon as the American Red Cross can procure the necessary cargo space. It will be followed later by another consignment of medical supplies to be paid for by a special donation of \$3,000 made to the Red Cross by the Lithuanian minister to the United States, Mr. Povilas Zadeikis. The first shipment will consist of simple drugs and disinfectants such as boric acid, ether, iodine, mercurochrome, phenol, castor oil and viosterol. Included also are hypodermic needles and syringes, as well as one thousand thermometers.

**AMERICAN BUREAU FOR MEDICAL
AID TO CHINA, INC.**

The American Bureau for Medical Aid to China, Inc., with headquarters at 1790 Broadway, New York 19, is an organization whose primary purpose is to cooperate with China in strengthening the Chinese health system. The organization was founded in 1937 by a small group of Chinese doctors and merchants in this country who banded together to send China urgently needed medical supplies. The directors of the bureau are doctors, scientists and businessmen, both Chinese and American. ABMAC works through agencies of the Chinese government and the National Red Cross Society of China. In 1941 ABMAC became one of the agencies participating in United China Relief and turned all fund raising activities over to that organization. Although it no longer makes any direct appeals for support, ABMAC welcomes contributions sent to its headquarters. Such donations are counted as part of the total funds raised by United China Relief.

SAFEGUARDING MILITARY INFORMATION

The Civilian Defense Volunteer Office of Greater New York in cooperation with the Army, Navy and Federal Bureau of Investigation is sponsoring "Safeguarding Military Information," a campaign to put every man, woman and child on the constant alert against enemy sabotage. The enemy, with agents in all sorts of unexpected places, has his ears constantly open for even seemingly innocent bits of information about the fighting forces, and piecing little bits together is a precision art with him. To be on the safe side . . . to safeguard all military information . . . think first before you spread the word that may mean death to our men and destruction to our plans. No one can be hurt by things left unsaid.

**DR. HENRY LADD STICKNEY APPOINTED
PORT MEDICAL SUPERVISOR**

Dr. Henry Ladd Stickney, Rockport, Mass., has been appointed by the War Shipping Administration as post medical supervisor of the port of Boston, which includes all of the Northeast, except Connecticut. His chief duties are to board incoming ships, meet trains and planes and examine wounded and ill merchant marine seamen and see that they are properly hospitalized. Headquarters are at Hotel Bostonian, 1138 Boylston Street, Boston.

**BAUER AND BLACK ADDS SECOND
WHITE STAR TO E PENNANT**

Bauer and Black, Chicago Division of the Kendall Company, and first surgical dressings house to win the E award, has now been awarded the second white star—for continued excellence in production—to add to its pennant.

APPEAL TO HOSPITALS AND PHYSICIANS IN WASTE PAPER DRIVE

The War Production Board regional offices throughout the country are asking for the cooperation of every hospital, every doctor, every medical and dental unit in the scrap paper program. They are asked to dispose of books, magazines, newspapers, records, wrappings, cartons, advertising literature and bulletins and to ferret out every last scrap or shred of paper to go into the salvage paper drive. Unless adequate supplies of waste paper can be moved to the mills, the curtailed paper and paperboard production will seriously retard the war program and will have even more serious effects on civilian uses of paper. Hospitals, doctors' offices and other medical and dental centers that depend on packaging to safeguard supplies have a direct stake in salvaging raw materials for continued production of paperboard. They have an even greater obligation to see that military and naval hospitals are given full supplies of paper through assistance in the waste paper salvage program.



Reprinted from the Chicago Daily News, Jan. 6, 1944.

Hospitals can be especially helpful in the waste paper drive by publicizing the campaign to all doctors whose offices are fruitful and profitable sources of old magazines, newspapers, bulletins and records. It has been suggested that hospitals urge doctors to send or bring their waste paper to the particular hospital which they serve as one means of aiding them to dispose of it with a minimum of effort. Desks, both in doctors' offices and in hospitals, are generally good sources of scrap and should not be overlooked. One Chicago hospital, for example, is supervising the huge task of micro filming all the hospital's records for the last forty years and contributing the original records to the scrap heap. Micro films will form more permanent and safer records, and at the same time sufficient floor space is being conserved to provide additional bed space. Several other hospitals are preparing to have their records micro filmed also. Since micro film machines cannot be purchased at present, they can be rented from local sources, the names of which will be furnished by the local War Production Board office. However, micro filming of old records is only one step that can be taken to swell the nation's paper scrap piles. Each hospital or physician is asked to check the following sources of waste paper: old files, ledgers, correspondence, receipts, canceled checks, time cards, invoices, pamphlets, calenders, bulletins,

obsolete catalogues, books and periodicals, containers, flower boxes and waste baskets.

Unused paperboard containers are particularly in demand, and the large number that come into hospitals regularly should be carefully conserved and turned back for reuse. Corrugated and solid fiber containers and setup paper boxes should be carefully collapsed, tied into bundles and turned over to a scrap or container dealer. More than a billion containers will be required in 1944 for the armed forces and lend-lease. While the armed forces in this country return containers for reuse, those overseas cannot. But every hospital can put its used containers back into circulation. In this lies the solution to the critical shortage of home front containers, the only way to keep medical and hospital supplies moving, a way every hospital can help the war effort and itself.

Hospitals handle paper and other salvage in one of two methods: (1) contract with a salvage dealer to collect, handle and dispose of all the hospital's salvage at regular intervals or (2) the hospital itself collects the salvage, bales, bundles or shreds it and disposes of it direct to a dealer or mill. Both paper balers and shredders can be obtained today, and hospitals seeking to purchase them should consult the local War Production Board officials.

The War Production Board estimates that more than 1,250,000 tons of salvageable paper is available every month, and a half of this will keep the mills running at peak production. Shipments of waste paper to the mills must be increased at least 167,000 tons (33.5 per cent) a month. No part of the war effort is more essential than the waste paper drive, and the hospitals of America are asked to shoulder their share of this job today.

PRODUCTION OF PENICILLIN BEING INCREASED

The Office of War Information reported recently that penicillin is being manufactured by thirteen American and two Canadian firms in continually increasing amounts and that by July 1944 the Chemical Bureau of WPB anticipates that twenty-one United States firms will be producing penicillin at full capacity. However, in spite of greatly increased production the U. S. armed forces do not have as much penicillin as they need and for some time the Army and Navy will have first call on supplies of this drug. In order to stretch supplies as far as possible, Army and Navy hospitals are restricting the use of penicillin to men whose wounds or diseases do not respond to treatment with the sulfonamides. The amount of penicillin available for civilian use at present is sufficient only to supply hospitals studying the effects of the drug. Distribution of penicillin for clinical research among civilians has been assigned by the Office of Scientific Research and Development to a committee of five physicians headed by Dr. Chester S. Keefer, Evans Memorial Hospital, Boston. Civilian requests for penicillin must be made of Dr. Keefer by patients' doctors. As a result of increased production resulting from intensive research carried out in laboratories of the U. S. Department of Agriculture and in industry, the price of penicillin has decreased from \$20 per hundred thousand units when it was first commercially manufactured in 1943 to \$4.75 per hundred thousand units, and further price reductions are anticipated.

The Chemical Bureau of WPB states that the principal reason for the scarcity of penicillin is the difficulty of production. Manufacture requires critical equipment such as refrigeration machinery, centrifuges, vacuum pumps, tanks and special packaging devices. The fermentation cycle is unusually long, and exacting conditions of sterility, temperature and atmosphere control are required to obtain any yield whatever. More than 20 quarts of culture fluid is required to yield 1 Gm. of the dry powder. Work is still being done to determine the most productive strains of mold and to improve culture mediums, methods of extraction, purification, standardization and packaging. Chemical research studies are being carried on for determining the structure of penicillin. Authorities agree that preparation of penicillin synthetically would greatly speed up production.

ORGANIZATION SECTION

OFFICIAL NOTES

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Fortieth Annual Meeting, Held in Chicago, Feb. 14 and 15, 1944

DR. RAY LYMAN WILBUR, Stanford University,
Calif., Presiding

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 14—MORNING

Medical Education Today

DR. RAY LYMAN WILBUR, Stanford University, Calif.: This address appears in full in this issue, page 815.

PROBLEMS OF POSTWAR MEDICAL EDUCATION

The Medical School Program

DR. HAROLD S. DIEHL, Minneapolis: This paper appears in full in this issue, page 819.

Hospital Training of Medical Graduates

DR. SAMUEL SOSKIN, Chicago: The Michael Reese Hospital is in the process of reorganizing its clinical services. We are preparing to help meet the postwar demand for hospital training and for refresher courses. We expect to accept a larger number of residents and assistant residents than we did before the war. We also expect to offer refresher courses for visiting physicians. We believe that the greater proportion of resident staff to available clinical material will necessitate the more intensive use of the latter for teaching purposes. We are therefore systematizing our routine so as to leave more time for demonstration periods and for didactic classes. With regard to the refresher courses for visiting physicians, we are fortunate in having at our institution a number of full time men working in the basic medical sciences, so that this portion of our postgraduate training program will offer no great difficulties. However, as at most hospitals, most of our clinical men are in the private practice of medicine. It is therefore necessary to arrange our program so that these men can undertake heavier teaching schedules while at the same time they continue to take care of their practices and make their living.

There are two factors whose influence on the picture as a whole it is very difficult to assess at the present time. These are, first, the rate of demobilization of physicians from the armed services and, second, the economic status and drives of those physicians at the time. The quantitative aspects of training facilities could be quite different, depending on whether the demobilization occurs over a period of one year or of five years. The qualitative aspects will depend to some extent on whether or not it will be possible to arrange for the early demobilization of teachers. The economic status will certainly have to be considered in determining how long and how intensive postgraduate courses should be. For those physicians who wish to resume their practices in or near a medical center, postgraduate courses confined to half-days might be most suitable. It would enable the trainee to devote the other half-days to building up his practice. But this arrangement would of course increase the time which the out of towners would have to spend away from his community. Probably both the full-day and the half-day type of program should be available at different institutions in each medical center. The necessary estimates of future conditions and needs, and the appropriate arrangements to meet those conditions and needs, can be made only by a joint committee including representatives of the hospitals, medical schools, the American Medical Association, the specialty boards, the armed forces and the government. After its planning was done, this

committee could continue to function as a central information and distribution agency.

The prewar specialist who has served in the armed forces as a specialist would seem to present no training problem. On the contrary, the wealth of experience gained under war conditions should enhance his value as a teacher. He may or may not desire a temporary association with a diplomate of his specialty board for purposes of reorientation in peacetime work. But, in any case, advantage should be taken of his special experience in amplifying the postgraduate courses, not only for the benefit of physicians returning from the armed forces, but also for those whose lot it was to remain behind and look after the civilian population.

Readjustments of Returning Medical Officers

DR. WILBURT C. DAVISON, Durham, N. C.: This paper appears in full in this issue, page 816.

Postwar Financing of Higher Education

FRED J. KELLY, PH.D., Washington, D. C.: I agree with the Armed Forces Committee on Postwar Educational Opportunities for Service Personnel, which said in its report to the President last July "the primary purpose of any educational arrangements which we may recommend should be to meet a national need growing out of the aggregate educational shortages which are being created by the war." There is no reason to minimize technological and medical education in the postwar period merely because it is imperative to emphasize liberal education. Liberal education should be used to leaven other education somewhat more than has been true in the past and thus in a greater measure fuse liberal and professional education. At any rate there must be no competition between liberal and professional education in the postwar swing of the pendulum. The sooner educational statesmen go to work to develop some ideas along the line of economy, the more surely we shall avoid some enforced economies which may not so well protect the quality of higher education.

There seems little doubt that the Congress will pass some form of bill for the education of veterans of World War II. Practically all the pending bills agree on two points: (a) Living expenses will be provided to all ex-service men and women who pursue satisfactorily a course in an approved educational institution and (b) educational institutions which provide the instruction will be paid for their services. Considerable variation exists among the several bills with respect to methods of carrying out these two purposes, but probably the Barden bill offers the most widely accepted plan. If it passes and the process of general demobilization starts by the middle of 1945, it will provide at least a short period of education for an estimated 1,000,000 men and women and an additional one, two or three years for possibly 200,000. What this will mean financially to the institutions is not clear in all respects.

The prospect for gifts appears brighter to me than to many with whom I talk. Persons and corporations whose income is rather large are coming to see that a gift to an educational institution costs them much less than the face value of the gift. If the national income can be kept at a high figure, the fact that it is distributed among a larger number of persons than formerly may be an advantage to the recipients of gifts. It will make it necessary, however, for the colleges to sell the idea of their worth to a larger circle of friends, and probably more critical ones.

The states have accumulated considerable reserves during the war because they have not reduced their levies as the tax bases—property and income—have increased. Hence it might appear that they could increase appropriations. But as federal taxes now increase there is likely to be a reaction against maintaining the present state tax levies. This reaction may come at

about the same time as inflationary influences are stemmed and property values and incomes decline. As a result of all the confusing and conflicting factors affecting appropriations to be made by state legislatures there is likely to be wide differences in the reactions in various states. Some states may treat higher education generously; others conservatively if not parsimoniously.

Summarizing, postwar financing of higher education faces five problems:

1. It must avoid the danger of imbalance among the several curriculums as the pendulum swings away from technological training.

2. Higher education must be prepared for a more critical attitude during deflation and put its own house in order by squeezing out most of the water in its administrative and teaching procedures.

3. The program for returned soldiers will provide a period of easy financing for the colleges but will tend to encourage cheaper education and jeopardize somewhat the traditional assumption that the cost of higher education should be borne by the state rather than by the student.

4. Income from gifts will be on a broader base of givers, but high income taxes may encourage giving.

5. To be on the safe side in the matter of state appropriations, institutions should take unusual steps to assume the appreciation of their services by an increasing proportion of people.

Distribution of Medical Care

DR. SAMUEL PROGER, Boston: This paper appears in full in this issue, page 823.

FEBRUARY 14—AFTERNOON

WARTIME PROBLEMS IN MEDICINE AND MEDICAL EDUCATION

The Army Medical Officer in Action

MAJOR GEN. GEORGE F. LULL: Two of the important functions of the Medical Department in combat are treatment and evacuation. These begin at the front line, where the company aid man gives the wounded soldier first aid and tags him for evacuation. He is then picked up by litter bearers and carried to the battalion aid station. This medical service must be continuous all the way from the front line to the zone of the interior.

The smallest unit to which medical officers are assigned in combat is the infantry battalion, an organization of about eight hundred men. Two medical officers are attached to a battalion at present, but owing to a shortage of medical manpower probably only one will be so assigned in the near future. This officer or officers, if there are two, establish a battalion aid station as near as possible in the rear of the battalion. Just how near this is depends on the terrain over which the unit is fighting. In rough country similar to Italy or in some types of jungle warfare the aid station may be in very close proximity to the fighting troops.

During the past two or three years the question of the waste of medical officers with tactical units has come up repeatedly. Why have a medical officer assigned to one of these tactical units when there seems to be so little medical work? Let me quote a statement from a returning battalion surgeon who has been in action: "The group that works in an aid station has to be extremely well trained to give immediate and proper care. Plasma injections quite often have to be given at the front line. There have been cases in our aid station in which, under very adverse conditions and with a lack of facilities, dangling arms or legs had to be amputated or packs of gauze inserted in gaping wounds to stop hemorrhages. All of this in a great number of instances necessitates well trained officers and Medical Corps men in sufficient numbers."

Backing up the medical service of the infantry battalions is the divisional medical battalion. The battalion is organized into collecting and clearing companies. The function of the collecting units is to evacuate the battalion aid stations to the clearing company either directly or through collection stations. In some instances casualties must be collected directly from the field, and in action involving armored units the area covered may be very

large. In some engagements ambulances and jeeps can come far forward, thereby reducing litter carry. In others, patients have to be carried for miles before they can be taken over by vehicles.

The clearing station of the medical battalion is established at a convenient site back of the front line, a distance averaging 4 to 7 miles. The clearing station not only acts as a hospital for the further treatment of the wounded but sorts out the various types of casualty.

The incidence of neuropsychiatric cases is in inverse proportion to the morale, and the cause starts right back here in the home territory. Soldiers' mail should not contain sentiments such as "I can't get along without you" or "When can you get home?" but should rather encourage him to get out and get the job done. Radio programs frequently carry the same note of nostalgic sentimentality, and this war has yet to produce a stimulating, stirring song such as has always been developed in past wars.

Relative to morale, a medical officer who has seen much active service in the present war states that "morale is directly in proportion to leadership; incidence of neuropsychiatric casualties is in inverse proportion to morale."

Clearing stations are evacuated by units of a higher echelon, either the corps or the army, and the patients are taken to evacuation hospitals. There are two types of evacuation hospitals, one having 400 and the other 750 beds.

Air evacuation has played a very important part in the transportation of wounded, both in the home territory and in theaters of operation. Recently large scale air evacuation made its debut in this country.

Medicine in the Navy

VICE ADMIRAL R. T. MCINTIRE: We have no right in medicine to make any plans at all on the finish of this war under three years. The medical department of the Navy is planning accordingly. We hope under the best of circumstances to see the European theater come to a climax in this coming fall. And we have a very tough job in the Pacific.

In the Navy we are laying our plans now to play a full part in the rehabilitation of our men. I know that the government has said that the Veterans Administration will be responsible for rehabilitation, and that is as it should be. But that will not excuse medicine in this country from doing its share. There will be a tremendous number of men who will come back from the wars to localities in which they hope to live and work. From now on to the end of this war, the man who comes into the service must be a man who can do full time duty. That is, he must be able to perform full duty in combat, because he will be a replacement. Thousands of men come back to us from combat areas. These men will never be fit for all duties again. Some will have lost an arm, some a leg, some one eye, some will have certain physical disabilities that will make them unfit for further combat. But those men are of great use to us in the service, and we are not going to send them on as useless. That is one of our first steps in rehabilitation. So our limited service group, then, becomes filled in a large extent by the man who has given his service in combat. When we bring him in his morale is raised, and the spirit that he brings for the men going on will pay us out over and over again.

We have interesting experimental work going on now in which certain industrial organizations are cooperating, where a man is being taught a trade, being taught a job while he is still in the hospital, taught by the organization into which he will go. The medical departments of both services are still saving lives; they are being saved in a heroic fashion by our men in the field. It would be a great comfort to the families in this country to know that, no matter where a man is in combat, very close to him is some member of the medical department. If he is unfortunate enough to be wounded, he has aid right at hand. It is a rare thing to see a man ever have to receive serious first aid from any other than a medical department representative. That goes for both services.

Then I can tell you some of the very tough things that these boys are doing—I am speaking of the enlisted men—in the services. We expect our doctors to be in there, and they are. But I can tell you that in one of the shows that just finished in Bougainville and Buin in certain sectors it would take twenty-four hours to move a casualty back 5 miles. Yet that was

being done hour after hour after hour, and being done so well by these men wading through the swamps and the jungles that our casualty figures somehow seemed to stay at about the same level. It speaks very well for those men who are working under such terrific conditions. Air transport comes into the picture in a much more prominent way than it did before, and we in the Navy will depend on it, for we are now out in the islands of the Pacific, and these islands are spread over tremendous distances. In fact, now we are likely to be fighting in a spot 700 or 800 miles from the nearest island that can support a large unit. We will need in the Pacific to evacuate these people directly to this spot, and that will be done. It means a great deal when one can do this.

I want to say that cooperation between the two services in all the theaters is excellent. I have thanked the Army for what it has done for us in Africa. The general hospitals have done a fine job for us. The reserve officers have done a magnificent job. They have gone into a foreign life. In peacetime the Navy has a rather set routine. We live in a very peculiar way. In wartime we haven't changed a great deal. When we bring a man into the group it's a little difficult for him to adjust himself. I have been astounded again and again when I see how well these reserve officers have functioned. It is not an uncommon thing for Captain Agnew to come in in the morning and say to me "I think so and so has done such a fine job that it will be well to give him a battleship" or we can put him on a heavy cruiser, or we can put him in this key job or that key job. And we are doing this. These men carry on for us. The regular officers simply form a skeleton for what is going on in our service.

I hope we can return to our set schedule of a yearly basis as far as medical school is concerned. I think we should, because fatigue is really something that comes on every one. I believe that year after year of nine month schedules with few breaks will do something to our professors and instructors. But pre-medical instruction is something else again.

Our research has still gone on, and we have developed two or three things that are very worth while. Our malaria control has advanced in splendid shape. We are now doing a much better job in the South Pacific. That takes time. We have two or three things that will save a lot of difficulty on board ship. Our research section developed a flash burn cream. That is sure to save a tremendous number of burns. To our research men in both the civil and military sides let me give a tremendous amount of credit for the hard work that they put in day after day.

The Expanding Field of Public Health and Preventive Medicine

SURGEON GENERAL THOMAS PARRAN, U. S. Public Health Service: The medical crisis has given us new tools and new methods which no thoughtful physician would wish to abandon and which will profoundly influence the practice of medicine and the national health for many decades to come. Important progress has been made in the attack on syphilis and gonorrhea. The sulfonamides and penicillin against gonorrhea, the new intensive therapy schedules and penicillin against syphilis—all these new tools have greatly shortened and simplified the treatment of these infections. The Public Health Service is currently operating a network of special treatment centers for the training of physicians, nurses and technicians and for the evaluation of the new short schedules. An extension of this type of special hospital is needed. The expansion of the mass tuberculosis case finding program, using the small film x-ray technic, has important implications both for medical education and for medicine. Reversing previous experience, 60 per cent of the cases uncovered in x-ray surveys are in the minimal reinfection stage as compared with approximately 10 per cent of the cases which came to treatment without intensive x-ray case finding. Formerly 90 per cent of the tuberculous patients were in need of hospitalization by the time a diagnosis was made. Improvement in methods of treatment now make it possible for the majority of patients in the early stages to be treated successfully without hospital care. Through hard necessity we have proved the value of new technics for the control of the venereal diseases, tuberculosis and malaria. We have learned much in the construction and operation of community hospital health centers. Preventive industrial medicine has been more widely

applied during the past three years than at any other time in our history. And the groundwork has been laid for national and worldwide nutrition programs. Preventive measures are indistinguishable from what has always been thought of as "curative." The same is true in the prevention of war psychoses. We have made definite progress in five important public health areas during the war. Each of these lines of action has been directed against a critical wartime problem. Each of these problems had been defined and redefined, and proposals made for their solution before the war. The results of our efforts during the war are sufficiently encouraging to suggest that these programs should be expanded now and projected into the post-war period with increasing momentum.

Before the war many urban areas in the United States lacked adequate safe water supplies, sewage disposal systems and other sanitary facilities. The war intensified these needs and created new demands in areas where large military and industrial installations were constructed. Through the provisions of the Lanham act only the most urgent of these needs have been met, and our public health engineers estimate that it will take an expenditure of about \$300 million annually for ten years to correct present deficiencies in sanitation facilities of all types. Even more acute has been the shortage of hospitals and health centers. To date, under the Lanham act, hospitals with a total bed capacity of about 10,000 have been constructed or converted. Health centers designed to house the local health department as well as clinical and diagnostic facilities have been constructed in a number of communities. The provision in Federal Public Housing projects of infirmaries, health centers and office quarters for private physicians has also helped to alleviate the shortage of health and medical facilities in war industrial areas.

Persistent malaria control work in the Southern states during the past decade has borne fruit. The trend is now sharply downward in this disease, which has been one of the South's heaviest health and economic burdens. Intensification of the work around Southern military and war industrial establishments has made it possible to increase our gains against malaria.

The expansion of industrial hygiene services and industrial medicine during the war has been one of the most significant advances in public health. Yet the shortage of trained personnel in this field—so intimately related to the needs of our industrial civilization—has precluded full application of available knowledge for the prevention of occupational diseases and the promotion of the worker's health. Plans for reconversion and full peacetime production indicate that the opportunities for medicine in the field of industrial hygiene will continue and increase in proportion to the availability of competent personnel.

Attempts to alleviate the overall acute medical shortage in civilian areas have not proved entirely successful. Closely linked as this problem is with the prewar maldistribution of physicians, it is not likely that the situation will definitely improve for the duration. Better distribution of medical manpower must be the first order of business in the evolution of any national health program projected for the future. We shall need a considerable increase in trained public health personnel to achieve the goal of adequate health services in all parts of the country. This will overtax the facilities of existing public health schools. There are large rural areas in which the level of public health and medical practice may be raised by the closer integration of private practice with public health service. In such areas the ideal would be to have every private practitioner devote a part of his time to community health service. To attain this ideal our medical schools will need to produce more general practitioners for our postwar society—well trained in both preventive and curative medicine, with a knowledge of modern psychiatry and nutrition, with access to a good hospital. The economic risk to the physician who elects to practice in a low income area is great. Some means should be found to underwrite the risk as well as to provide the facilities, for we need to attract the highest type of our younger men if we are to sustain good community medical and health services.

Present indications are that public health is at the beginning of a new era—an era of positive advance in which the goals will be higher levels of health rather than solely the control of epidemic diseases. Ever a field of increasing returns, public health practice, however, will attain the new goals only as it advances in dynamic union with medical practice. And, con-

versely, progress in medical practice depends on the application of new knowledge on the broad scale implicit in the modern concept of public health. Such a united advance is predicated on the past performance and future achievements of our medical schools and boards of licensure.

The Army Specialized Training Program

COLONEL FRANCIS M. FITTS, M. C., A. U. S.: There are now 23,360 enlisted men of the Army assigned to Army Service Forces units at 124 approved schools of medicine, dentistry and veterinary medicine, and at 51 colleges and universities accredited for premedical, predental and preveterinary instruction. These enlisted men have been assigned to these units for the definite and special military duty of preparing themselves, under the Army Specialized Training Program, for the appropriate doctor's degree in order that they may be commissioned in the Army of the United States as replacements for the expected losses among medical, dental and veterinary officers. This figure represents 13,680 enlisted men detailed for the study of medicine, 5,761 for that of dentistry and 1,392 under instruction in veterinary medicine; 2,527 are in AST units in preparation for assignment for professional training in these three fields. Unless the requirements of the Surgeon General for loss replacements are modified, the number of trainees studying medicine should remain fairly constant and will require the utilization of 55 per cent of the capacity of the approved schools of medicine in the United States. The number under training in dentistry will gradually decrease to 35 per cent of the capacity of the dental schools, i. e. to about 3,700. Training in veterinary medicine will be discontinued when the present trainees have been graduated. Enlisted men in preprofessional curriculums under preparation for assignment to 1945 vacancies will increase each month to about 5,500 by October 1944 and remain at that level.

The first army selected and army trained preprofessional trainees will be assigned to AST units at medical and dental schools in January 1945. Thereafter, during each nine months' period, we must so assign 3,500 enlisted men qualified for the study of medicine and 1,040 for that of dentistry. Since the vacancies in professional schools recur at irregular intervals, provisions must necessarily be made for the interim duties between the completion of preprofessional and the beginning of professional training. Such interim duties will be in Army Service Forces installations and with the Medical Department. Training in medicine and dentistry is thirty-six months in length and follows the standard curriculum of each contracting school. On receipt of the degree of doctor of medicine or dentistry the trainee will be discharged from his enlisted status in order to accept a commission in the Medical or Dental Corps, Army of the United States. The newly appointed dental officer will be ordered to active duty on appointment. Active duty, however, for medical officers will be delayed a minimum of nine months for the completion, on an inactive status, of the prescribed hospital internship. Graduates in veterinary medicine will be appointed in the Veterinary Corps in such numbers as the military situation requires. Those not commissioned will be discharged to meet the requirements of the nation's animal industry.

Briefly, this is the Army Specialized Training Professional and Preprofessional Program. Every attempt has been made to continue the training of medical and dental students and to provide physicians and dentists for the military forces with the minimum interruption of scheduled instruction and the minimum changes in curriculums. As a result there have been numerous and frequently confusing modifications of the standard procedures of classification for and assignment to the Army Specialized Training Program. However, I am sure that it is quite apparent that the potential doctors and dentists, destined as medical and dental officers of the Army, cannot be chosen on purely quantitative qualifications and without regard to sincere interest in and aptitude and fitness for the study of a chosen profession. Careful screening procedures are necessary in order that the attrition in this lengthy—and costly—program be kept at a minimum and that the production of the highest type of physician and dentist for the Army be assured.

The wide departure from past experience in the selection of medical and dental students, the reduction in the period of premedical and predental preparation and the anonymous assign-

ment of trainees to individual schools of medicine and dentistry constitute a challenge to the Army's training program. The standards of medical and dental education must not be lowered. They may be maintained without undue attrition among the enlisted trainees only if their selection, preparation and application under the Army Specialized Training Program are superior. Our administrative procedures must be directed toward this end. I am confident that the scholastic competence of ASTP trainees assigned for preprofessional and for professional training will be the equal of, if not, as I firmly believe, superior to that of those who have entered on the study of medicine and dentistry in previous years. The availability of enlisted men who are sincerely interested in professional studies and possess the desired aptitude and fitness for medicine and dentistry will depend largely on the number of trainees in the basic curriculum. Both quantity and quality must be maintained. There is much at stake in the Army and in civil life after the war.

Medical Manpower for Civilians

DR. HARVEY B. STONE, Vice Chairman, Directing Board, Procurement and Assignment Service for Physicians: The Procurement and Assignment Service has been acting as a clearing house for the various interests that require the services of medical personnel, seeking to distribute a strictly limited supply as widely and fairly as possible to meet a greatly increased and varied demand. The first and most urgent of these demands has been the requirements of the federal services, but we were enjoined in our Presidential authorization to do this "with due regard for civilian needs." It has been agreed that the ratio of 1 practicing physician to 1,500 people is a minimum adequate provision. With this as a basis of calculation, it was then determined how many doctors could be withdrawn from civilian practice for federal service. The full number of officers allocated to the federal services has not yet been actually provided to them. There are still several thousand doctors marked available for such service who for various reasons have not been commissioned. This occasion cannot be lost to urge that the men considered available be induced to accept commissions. Of primary importance is the maintenance of medical educators so that a continuing and increased supply of well trained doctors may be produced. The staffs of the schools have been seriously reduced, the number of students increased and the curriculum accelerated. In consequence, a situation has been reached in which authoritative voices have warned that no further withdrawals from faculties of medicine can safely be made. Similarly the hospitals must be allowed to keep enough interns and residents to render safe and adequate care to their patients. The group of doctors concerned here, the most recent graduates, is precisely the group that the armed forces regard as most useful to themselves and that they therefore are most desirous of commissioning. The difficulty of the situation is increased by the fact that even in peacetime there were more approved internships available than there were graduates each year in medicine.

These considerations led to the adoption of two plans designed to effect a working solution of the conflicts of interests and demands. These two plans are known as the 9-9-9 intern-resident program and the hospital quota program. The 9-9-9 plan, so far as it relates to the period of appointments of hospital personnel, applies to all alike, whether militarized or not. This is obviously necessary for uniformity of time periods of all appointments. As far as it limits the appointment of a man to one period each as intern, assistant resident and resident, it applies only to militarized personnel. Others may be continued on the house staff as long as the hospital desires. This provides an opportunity for prolonged training of individuals not subject to military orders. On the other hand the quota allowed each hospital includes both military and nonmilitary house officers.

A fairly accurate and complete picture of medical personnel needs of the whole country has been kept current. At the same time certain groups, particularly the field force of the Procurement and Assignment Service, have been on the alert to find and persuade doctors to relocate. Also communities have been stimulated to make relocation attractive by arranging for living and office quarters. State licensing boards have been cooperative in easing the legal difficulties of men moving across state lines. Well over two thousand locations have been accomplished up to the present.

The Procurement and Assignment Service has been concerned with and had a part in the provision of medical personnel for industry and for the new communities that have sprung up in various parts of the country. Its plan of action here has been parallel to that described for other civilian needs and has perhaps been equally successful. Problems have been presented to us by the Veterans Bureau and by other federal agencies and by special situations that have arisen. New problems will undoubtedly arise with the end of the war and demobilization. What part, if any, the Procurement and Assignment Service will be called on to play in these anticipated developments is as yet undetermined.

Wartime Graduate Training

CAPTAIN EDWARD L. BORTZ (MC), U.S.N.R.: Graduate medical education, residencies and fellowships, together with the activities of the specialty boards, have been important influences in bringing medicine to its present high level in the United States, as emphasized by Balfour. The formalized course of the residency and the fellowship, essential for young teachers in peacetime, may readily be modified in the presence of a national emergency so that prospective teachers may enter military service. While participating in the military program they may obtain a quality of experience that will be of invaluable assistance in later years. It is significant that certifying boards are granting credits to doctors in service today who are doing work at a graduate level in anticipation of taking the examinations for certification.

To maintain the quality of teaching that has produced the present high standard of medical education, it is essential that sufficient provision be made for a continuous flow of teaching personnel. Thoughtful observers have suggested that teachers from the various medical school faculties now in service should be returned to teaching after a period of experience with the troops, exchanging places with colleagues who have remained in a civilian capacity.

First hand experience in the theaters of war has emphasized the necessity of specialized training for medical officers. Large numbers of them have been given advanced instruction in certain of the major subjects at various medical centers here and abroad. Courses have been given in epidemiology, laboratory medicine, tropical diseases, venereal disease, radiology, physical therapy, aviation medicine, general and specialized branches of surgery, anesthesia, problems of transfusion, plasma, the treatment of shock and so on. Through these courses medical officers are receiving instruction under the direction of qualified experts in the various specialties which would have been impossible in peacetime. This training, however, is not expected to develop specialists. It is an important means of better fitting the doctors to cope with many of the war casualties.

In addition to the many researches being carried on in some of the large installations, service staff doctors regularly hold medical conferences, staff meetings, teaching ward rounds and special demonstrations; likewise a large number of instructive motion pictures dealing with current problems are available for teaching. Service hospitals adjacent to medical schools might well play an important role in the clinical instruction of medical students, since clinical material and teaching personnel of the highest standards are available. Not infrequently, service doctors are invited to address classes in medical schools; likewise, faculty members from the various schools visit the service hospitals and participate in programs of instruction.

Through the Office of Scientific Research and Development, authorities from the three services are in constant contact with the topflight investigators of the various medical schools. At no other time in the history of our country has there been greater medical research activity than is being carried on now.

Under the auspices of the American Medical Association, the American College of Physicians and the American College of Surgeons, and with the authorization of the three surgeons general, a significant extensive movement in medical education has been carried on for the past year. Originally tried out on a small scale by the American College of Physicians, groups of teachers from medical schools were organized for the purpose of conducting periods of instruction in a certain number of service hospitals. These events were so cordially received, and the service doctors were so eager to have them repeated, that a

nationwide movement was organized, under the stimulus and guidance of the three major medical organizations. With the authorization of the three surgeons general, who have been most generous in their support, and aided by the deans and faculties of some fifty medical schools, meetings in the form of teaching ward rounds, clinical pathologic conferences, study groups, question and answer periods, moving pictures and other types of practical demonstrations have been presented throughout the entire nation. The subjects most frequently presented were (1) chemotherapy, (2) cardiovascular diseases, (3) gastrointestinal disorders, (4) general surgery, (5) psychiatry, (6) malaria, (7) rheumatism and arthritis, (8) orthopedic surgery, (9) shock, burns, blood substitutes and (10) (a) neurosurgery, (b) traumatic surgery of the abdomen and chest.

Many of the larger medical installations have their own clinical conferences and study groups. Where such programs have already been instituted, the role of the Wartime Graduate Medical Meetings has been twofold: (1) meetings have been jointly planned and conducted by the service hospital authorities and the regional committee of the Wartime Graduate Medical Meetings; (2) lecturers have been invited, through Wartime Graduate Medical Meetings, to participate in meetings planned by the service hospital staff. The objective is continuous graduate education to meet the needs and desires of physicians in the armed forces as well as those in civilian practice.

The majority of doctors are unable, for one reason or another, to take one, two or three years off for special training. For these members of medicine, who study the literature and who are eager for the stimulus that is derived from intimate contact with nationally-known authorities at regular intervals, the short brush up course has proved a helpful instrument. This type of course is not a short cut to a specialty. It does not produce specialists. It represents one of several helpful aids to a higher brand of medical practice for many doctors who can arrange for one or more weeks to be profitably spent following a master clinician or teacher as he goes on rounds or conducts a conference or seminar. Courses on special subjects have been successfully conducted by the Army, the Navy, the Public Health Service, the American College of Physicians and the American College of Surgeons. Furthermore, many other organizations have offered attractive teaching programs for small groups, all of which have played a role in elevating the plane of medical practice.

When hostilities cease, presumably the majority of doctors will return to practice and hospital duties. Many of these men are anticipating courses, from time to time, of two, four, six or eight weeks during which they may be given the privilege of a thorough review of recent work in various fields. Even during wartime such courses have constantly been in demand. With assistance from deans and faculties of the medical schools, such courses can be arranged throughout the nation. When scheduled on a peacetime basis, it may be possible for a man to spend two to four weeks at one school and, if time permits, move on to another school for a course in a different field. Military medicine as a career will attract an increasing number of young graduates. There needs to be a closer rapprochement between the medical services of the armed forces and the sources of supply for trained personnel.

(To be continued)

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

March 25. "Our Blood for Our Boys."

Speaker, Harold A. Vonachen, M.D., medical director, Caterpillar Tractor Company, Peoria, Ill.

April 1. "White Reaper."

Speaker, Kendall Emerson, M.D., managing director, National Tuberculosis Association, New York.

April 8. "Men with New Faces."

Speaker, Major General D. N. W. Grant, M. C., A. U. S. Air Surgeon, A. A. F., Washington, D. C.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1250 has been reported to the House of Representatives, proposing to repeal the existing law which provides for the forfeiture of pay of persons in the military and naval service of the United States who are absent from duty on account of the direct effects of venereal diseases due to misconduct. H. R. 2985 has passed the House, providing for the garnishment, execution or trustees process of wages and salaries of civil officers and employees of the United States. H. R. 4346 has passed the House, making appropriations to supply deficiencies and to provide supplemental appropriations for the fiscal year ending June 30, 1944. Among other things, the bill appropriates an additional \$2,700,000 for the nurses' training program, an additional \$127,500,000 for the construction of community facilities, including hospitals, and \$30,000,000 for the construction of 9,252 additional beds for veterans' facilities: 100 beds for the tuberculous, 100 general beds (cancer cases) and 9,052 beds for neuropsychiatric patients.

Bills Introduced.—S. 1767, introduced by Senator Clark, Missouri, for himself and seventy-eight other senators, proposes to provide federal aid for the readjustment in civilian life of returning World War II veterans. This bill, to be cited as the "Servicemen's Aid Act of 1944," declares the Veterans' Administration to be an agency of the United States vital and essential to the successful prosecution of the war and entitled to priorities second only to the War and Navy Departments; directs the Administrator of Veterans' Affairs and the Federal Board of Hospitalization to expedite the construction of additional hospital facilities for war veterans and to enter into agreements and contracts for the use of suitable Army and Navy hospitals by the Veterans' Administration after cessation of hostilities and after such institutions are no longer needed by the armed services; appropriates \$500,000,000 for the construction of additional hospital facilities; authorizes the Administrator of Veterans' Affairs and the Secretary of War and the Secretary of the Navy to enter into agreements for the mutual use or exchange of use of hospital and domiciliary facilities; provides for the transfer or detail of commissioned or enlisted personnel from the armed forces to the Veterans' Administration and provides for the postwar education and training of any person who served in the active military or naval service on or after Sept. 16, 1940 and prior to the termination of the present war and whose education or training was interrupted or prevented by service or who requires a refresher or retraining course to fit him for employment or profession. This bill is pending in the Senate Committee on Finance. A companion bill, H. R. 4357, introduced by Representative Rankin, Mississippi, is pending in the House Committee on World War Veterans' Legislation. S. 1781, introduced by Senator Johnson, Colorado, provides for full military rank for members of the Army Nurse Corps, dietitians and physical therapy aides. H. R. 4351, introduced by Representative Lane, Massachusetts, provides retirement benefits for emergency officers of World War I who heretofore have failed to apply for the benefits within the time prescribed by existing law. H. R. 4369, introduced by Representative Fish, New York, proposes an appropriation of \$5,000,000 to enable the Administrator of Veterans' Affairs to provide seeing-eye dogs for blind veterans who are entitled to disability compensation under the laws administered by the administrator.

STATE MEDICAL LEGISLATION

Arizona

Bills Introduced.—H. 18-XX proposes that the annual registration fee required of osteopaths be reduced to \$6 for the fiscal year ending June 30, 1945. H. 20-XX proposes that the annual registration fee required of naturopaths be reduced to \$5 for the same period. H. 23-XX proposes that the annual registration fee required of chiropractors for that period also be reduced to \$5. H. 24-XX proposes that the annual registration fee for the fiscal year ending June 30, 1945 with respect to licentiates of the medical practice act be reduced to \$150. H. 28-XX proposes to exempt from the payment of the annual

registration fee required by law from practitioners of professions and businesses any member of the armed forces of the United States, a citizen of the state, who at the time of his induction into the armed services held a valid and subsisting license from the state.

Mississippi

Bill Introduced.—H. 791 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate that the party has been examined for the presence of a venereal disease.

New Jersey

Bills Introduced.—S. 152, to amend the law relating to medical service corporations, proposes, it would seem, to permit a medical service corporation, other than a medical service corporation organized without capital stock and not for profit, to establish, maintain and operate medical service plans. A 309 proposes to repeal the present medical practice act.

New York

Bills Introduced.—S. 1550 and A. 1957 propose to require every physician attending or a hospital caring for a case of a wound inflicted by a pointed instrument to report the facts at once to appropriate police authorities. Under the present law such a report is required in cases of injuries arising from or caused by the discharge of a firearm, which will no longer be required if either of these bills, is enacted. S. 1572 and A. 1972 propose to authorize the revocation or suspension of the license of any qualified examiner or qualified psychologist for a violation of the mental hygiene law or any law in the course of the practice of his vocation or for fraudulent or dishonest practice or incompetence or untrustworthiness.

Bill Passed.—S. 1489, to amend the uniform narcotic drug act, passed the senate March 13. This bill proposes so to define narcotic drugs as to include isonipheccaine, which the bill states "means the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified."

Rhode Island

Bills Introduced.—H. 784 proposes to enact a separate naturopathic practice act and to authorize the director of health, with the approval of the governor, to appoint a board of three examiners in naturopathy to examine and license applicants for licenses to practice naturopathy. The bill proposes that "the practice of the profession of naturopathy is hereby designated as drugless and nonmedical and is defined as a science dealing with the diagnosis and treatment of disease through natural therapeutics. It shall embrace and include physiological, anatomical and dietetic sciences, such as physiotherapy, dietetics and the use of herbs, including foods, powdered and dehydrated, and fruits, and such other methods of treatment as are taught in the various recognized schools of naturopathy, except the practice of major surgery and the prescription of drugs." H. 825 proposes to direct the director of education to arrange for annual lectures to be given to the students of each high school of the state explaining the problems of cancer and the means for its cure and control. H. 879 proposes to permit a licensed chiropodist or podiatrist to prescribe, purchase, administer and dispense narcotic drugs in good faith and in the course of his professional practice only. H. 833 proposes to require every city and town to make provisions for a school health program, including health service, health instruction and physical education, under such rules and regulations as may be promulgated by the state director of education in cooperation with the state director of health.

South Carolina

Bill Introduced.—S. 963, to amend the laws relating to the practice of osteopathy, proposes to make eligible for examination and licensure a graduate of an approved osteopathic college "if he or she has attended four full courses of lectures of at least thirty-six (36) weeks each, or any combination of such courses aggregating one hundred forty-four (144) weeks and has received a diploma therefrom."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Physician Observes Ninety-Third Birthday.—On February 1 Dr. William J. Curry, Rogers, observed his 93d birthday. Newspapers reported that Dr. Curry kept office hours as usual and attended to patients.

District Meeting.—The First Councilor District Medical Society of northeast Arkansas was addressed in Jonesboro, March 22, by Drs. Eugene M. Holder, Memphis, Tenn., on acute surgical conditions of the abdomen and Dr. Percy S. Pelouze, Philadelphia, on gonorrhea.

CALIFORNIA

Dr. Alton Ochsner Lectures.—Dr. Alton Ochsner, William Henderson professor of surgery, Tulane University of Louisiana School of Medicine, New Orleans, will give a series of lectures in San Jose, April 3-8, under the auspices of the San Jose Hospital staff. Dr. Ochsner will, in his discussion, cover gallbladder disease and its surgery, bronchogenic carcinoma, preoperative and postoperative care and diseases of the peripheral vascular system. He will also deliver a public lecture on the control of cancer. Interested physicians are invited to attend the lectures.

The Charles Cook Hastings Home for Tuberculosis.—Preparations are now under way to establish the Charles Cook Hastings Home on a 7 acre tract of land purchased from the La Vina Sanatorium, La Vina, near Pasadena (THE JOURNAL, May 23, 1942, p. 356). The establishment of the home was provided for in the will of the late Charles H. Hastings in memory of his father. The project will be financed and directed by the Hastings Foundation, which was also set up in the will for research into the cause and cure of tuberculosis and other diseases. The foundation was organized Feb. 19, 1943. Under the recent agreement Dr. Carl Howson, Los Angeles, medical director of the La Vina Sanatorium, will become first medical director of the Charles Cook Hastings Home. The project will begin operations by conducting research into the causes and possible means of curing tuberculosis and provide care and treatment for from 16 to 20 persons afflicted with tuberculosis. The patients of the home shall be cared for free from all costs and charges of any kind. It is hoped that construction may be begun in the spring, contingent on obtaining the necessary priorities.

CONNECTICUT

Personal.—Dr. Roy M. Seideman, formerly of Rochester, N. Y., has been appointed industrial hygiene physician in the bureau of industrial hygiene of the Connecticut State Department of Health, Hartford.

Health Consultant Needed.—The state personnel department of Connecticut announces an open competitive examination for the position of local health consultant, the last date for filing application to be April 8. Applicants must have not less than five years' employment in public health work, including experience as health officer of a municipality, county or district; or completion of postgraduate training in public health work in three years of such experience; or an equivalent combination of experience and training. The applicant must be eligible for a license to practice medicine and surgery in Connecticut. Connecticut residence is waived for the examination, but candidates must be citizens of the United States. The salary range is \$5,100 to \$5,700 a year. Additional information may be obtained from the personnel department, State of Connecticut, State Capitol, Hartford.

DISTRICT OF COLUMBIA

Dr. Bocock Heads Medical Center.—Dr. Edgar A. Bocock, until recently head of Gallinger Municipal Hospital, has been named administrator of Doctors Hospital and superintendent of the Medical Center, including the hospital and the adjoining Washington and Columbia medical building. The committee that selected Dr. Bocock was headed by Dr. Charles Stanley White, president of the four corporations that own the medical center. Doctors Hospital is four years old.

FLORIDA

Temporary Licensing of Relocated Physicians.—Under executive order, the governor recently directed the state defense council to license during the war emergency relocated physicians in particular counties with certain stipulations. These licenses may be granted if the council receives:

A certificate of need for such a physician from the county medical society, or, in the absence of a county medical society, a certificate to such effect from the board of governors of the Florida Medical Association. Such certificate must give the name of the physician, the state in which he last practiced, the fact that he was in good standing in that state and a statement that his educational qualifications meet the state requirement. Such certificate must be approved by the state office of medical procurement and assignment service.

A certificate from the state board of medical examiners approving the procedure for the temporary licensing of relocated physicians.

A certificate from the state board of health approving the procedure for temporary licensing of relocated physicians.

A resolution from the board of governors of the Florida Medical Association approving the procedure.

A resolution of the state defense council issuing the license to the physician certified to practice in a particular county only, subject to the same laws and regulations as other physicians, his license subject to revocation by operation of law or by direction of the governor; but in no event shall the license continue in effect longer than six months after the end of World War II.

INDIANA

Plaque Honors Dr. Barnhill.—A scholarship plaque has been established by the Indiana University chapter of Phi Delta Epsilon medical fraternity as a memorial to the late Dr. John F. Barnhill, Indianapolis, who had been a member of the faculty of the university for thirty-eight years. The plaque will be placed in the medical building on the Bloomington campus. The Indiana chapter of the fraternity has also offered to defray the expense of an annual address at the medical school by a prominent anatomist. The address would be given in connection with an inscription on the plaque of the name of the student achieving the highest scholarship in gross anatomy.

KANSAS

Course on Medical Protozoology.—A short course on medical protozoology was held at the University of Kansas, Lawrence, February 28-March 4. It included preliminary work in malaria, Trypanosoma and Leishmania, Endamoeba histolytica, amebas, intestinal flagellates of man, intestinal ciliates and sporozoa. Miss Mary E. Larson, assistant professor of zoology, University of Kansas, conducted the course.

Snyder Memorial Foundation.—The Snyder Memorial Foundation was recently granted a charter to act in the "investigation of and the research concerning the problems of medicine and surgery, and the dissemination of knowledge thus acquired . . . also for the advancement of medicine and surgery. . . ." The new foundation was named in honor of the late Dr. Howard L. Snyder, Winfield, who died Aug. 16, 1940. He was president of the state society, 1936-1937. The foundation is a nonprofit group organized and registered on Nov. 8, 1943. Its charter was filed by Mr. Walton Goode with offices at 103½ East Ninth Street, Winfield, where the offices of the new corporation will also be located. It is sponsored by Mr. A. W. Kincaide, Wichita; Major Howard E. Snyder, M. R. C., and Dr. Cecil D. Snyder, Winfield, sons of Dr. Snyder; Dr. Harold H. Jones, Winfield, and Mr. Goode.

LOUISIANA

Health Department Moves.—All of the city health departments except the laboratories have moved from the present headquarters in the city hall to the old Poydras Building, on the corner of Poydras and Carondelet streets. The ground floor of the building will be used for various phases of the work on vital statistics, according to the *Bulletin* of the Orleans Parish Medical Society.

Medical Society Urges Action on Insurance Bill.—The Orleans Parish Medical Society recently adopted a resolution recommending the immediate passage of the pending Bailey-Van Nuys bill, which excludes fire insurance companies from the provisions of the antitrust laws, on the basis that opposition to this bill "constitutes a vigorous attempt to deprive the respective states of the right to regulate the insurance companies and to center the authority in Washington."

Appointments to Tulane.—Dr. Cecil A. Krakower, formerly connected with the Columbia University School of Tropical Medicine in San Juan, P. R., has been appointed assistant professor of bacteriology and pathology at Tulane University of Louisiana School of Medicine, New Orleans. Dr. Arthur Judson Walker, formerly acting medical director of the Firestone Plantations Company in Liberia, has been named assistant professor of tropical medicine at the school.

Hospital News.—Charity Hospital, New Orleans, recently acquired an extensive area, the hospital board has approved its use in selected private cases though its control remains with Charity Hospital.—The Eye, Ear, Nose and Throat Hospital, New Orleans, has been made a residuary legatee of the estate of the late Mrs. Celeste Stauffer Eastwick, a former resident of New Orleans who recently died in New York. The exact amount of the bequest is unknown, but it is believed that it will be sufficient for the erection and operation of additional hospital facilities. Additional funds will revert to the institution on the death of Mrs. Eastwick's heirs.

MARYLAND

The Thayer Lectures.—Dr. Richard E. Shope, a member of the Rockefeller Institute for Medical Research in the department of animal and plant pathology, Princeton, N. J., commander in the U. S. Naval Reserve, delivered the fourteenth course of lectures under the William Sydney Thayer and Susan Read Thayer lectureship in clinical medicine, March 16-17, at Hurd Memorial Hall, Johns Hopkins Hospital, Baltimore. His subject was "Old, Intermediate and Contemporary Contributions to Our Knowledge of Pandemic Influenza."

Personal.—Dr. Elvin L. Sederlin, Bismarck, has resigned as acting director of the venereal disease control division of the North Dakota state health department in order to accept a position as assistant health director of Baltimore County.—Dr. James A. McCallum, Centerville, health officer of Queen Annes County, has been appointed health officer of Washington County, succeeding Dr. William R. Willard, Hagerstown.—Dr. Harry B. Smith, formerly of Jacksonville, Fla., and now field consultant in the division of venereal disease control in the state department of health, has been appointed senior medical supervisor in the bureau of venereal disease of the Baltimore City Department of Health.

Meeting on Shock.—The pathologic section of the Baltimore City Medical Society sponsored a meeting March 3 at which Dr. Virgil H. Moon, professor of pathology, Jefferson Medical College of Philadelphia, spoke on "The Mechanisms of Shock as Related to Clinical Management." In a discussion of the principal paper Dr. Alfred Blalock, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, presented the differences of opinion on the subject; Dr. Harry N. Harkins, associate professor of surgery at Johns Hopkins, the need for collaboration between the several schools of thought, and William R. Amberson, Ph.D., professor of physiology, University of Maryland School of Medicine and College of Physicians and Surgeons, the need for continued investigation in the use of pure hemoglobin in the therapy of shock.

MASSACHUSETTS

Dr. Emerson Retires After Thirty-Five Years in State Service.—Dr. Ernest B. Emerson, for twenty-six years superintendent of the Rutland State Sanatorium, Rutland, has retired, ending almost thirty-five years in state service. Dr. Emerson graduated at Harvard University Medical School, Boston, in 1898.

Dr. Avery Goes to Iran.—Dr. Bennett F. Avery has resigned as dean of Boston University School of Medicine to accept an appointment as director general of public health of Iran. Dr. Avery, who graduated at the University of Michigan Medical School, Ann Arbor, in 1925, spent considerable time at the American University of Beirut, Beirut, Syria, serving as adjunct professor of anatomy and later as associate professor. He also served for a time as acting dean.

MICHIGAN

Physician's Death Involves Murder Charge in Riot Trial.—On March 15 Aaron Fox, Detroit, was sentenced to serve from seven and one-half to twenty-five years in prison for second degree murder in connection with the race riot slaying in June 1943 of Dr. Joseph De Horatiis. Newspapers report that the arrest warrant accused Fox of hurling a brick through the window of the physician's car and hitting him on the head.

MINNESOTA

State Medical Meeting.—The Minnesota State Medical Association will hold its ninety-first annual meeting at the Mayo Civic Auditorium, Rochester, April 13-15, under the presidency of Dr. Elmer M. Jones, St. Paul. Dr. Ralph S. Bromer, Bryn Mawr, Pa., will deliver the Russell D. Carman Memorial Lecture, April 13, on "Roentgenologic Diagnosis of Skeletal Disease in Infants and Children." Other guest speakers who will make their appearance under special auspices include Drs. Ralph M. Waters, Madison, Wis., Northern

Minnesota Medical Association, on "Summary and General Considerations of Anesthesia in General Practice," and Hugh McCulloch, St. Louis, Northwestern Pediatrics Society, on "Significance of Rheumatic Fever to the Community." Other guest speakers on the program include:

Vice Admiral Ross T. McIntire, surgeon general of the U. S. Navy, Tropical Diseases.
Dr. Raymond W. McNealy, Chicago, Summary and Discussion of Pre-operative and Postoperative Care for the Bad Risk Patient.
Dr. John H. Moore, Grand Forks, N. D., Responsibility of the Physician in Obstetric Practice.
Dr. Ralph A. Reis, Chicago, Control of Obstetric Hemorrhage.

Other speakers on the program include the following physicians: Drs. Herbert P. Johnson, Rochester, on "Clinical Application of Cover Test and Prism Screening"; Frederick A. Figi, Rochester, "Malignant Tumors of the Middle Ear and Mastoid," and Ernest M. Hammes, Rochester, "Differential Diagnosis of Choked Disk and Optic Neuritis." Sessions will be held on peptic ulcer, anesthesia in general practice, chemotherapy, preoperative and postoperative care for the bad risk patient, current problems in obstetric practice, orthopedic and fracture surgery, diseases of the colon and diseases of the chest. One session will be devoted to a series of case reports and another to a series of round table luncheons. The Olmsted-Houston-Fillmore-Dodge County Medical Society and the state medical association will hold an open house, April 13, in the Mayo Civic Auditorium Arena and Theater. Dr. Herman L. Kretschmer, Chicago, President-Elect of the American Medical Association, will be guest on this occasion. Other features of the meeting will be the presentation of the medal awarded annually by the Southern Minnesota Medical Association for the best scientific exhibit and the presentation of certificates to candidates of the "Fifty Club," who have practiced medicine for fifty years.

NEW YORK

Time Between Tuberculosis Reporting and Death.—*Health News* reports that a recent study of tuberculosis case reporting in upstate New York disclosed that during the years 1940-1942 about 21 per cent of the fatalities from all forms of tuberculosis were not reported as cases before death. In addition, about 17 per cent of the total were reported within less than three months before death and another 6 per cent within three to six months before death. In other words, it was pointed out, about 44 per cent of the deaths either were not reported at all during life or were reported a relatively short time before death. In explaining circumstances which extenuated this situation, *Health News* states that in certain instances, for example, tuberculosis, the diagnosis is based only on the necropsy. In others the deaths are from nonpulmonary forms of the disease, in which there is ordinarily no exposure hazard. Some deaths occur in persons who establish residence in upstate New York a short time before death. Other similar factors may account for some of the late reporting but they explain only a small proportion, it was stated.

New York City

Personal.—Frank S. Lloyd, Ph.D., executive director of the physical fitness division of the Federal Security Agency and professor of education at the New York University, has been appointed chairman of the hygiene department of College of the City of New York, to succeed Frederic A. Woll, Ph.D., who in June will reach the mandatory retirement age of 70.

Dr. James Shannon to Head Department of Pharmacology.—Dr. James A. Shannon, associate professor of medicine at New York University College of Medicine since 1942, will become professor and chairman of the department of pharmacology at the university on the retirement next September of Dr. George B. Wallace. Dr. Shannon graduated from the university in 1929. He has written extensively on renal physiology and is currently devoting all his time to the development of more effective means for the suppression and treatment of malaria under the auspices of the Office of Scientific Research and Development.

Medical Society Protests Compensation Charges.—The Medical Society of the County of New York has protested to Governor Dewey that "serious accusations and innuendoes" contained in a report of administration of the state workmen's compensation law are "biased and untrue." Newspapers stated that the report charged defrauding of injured workers in compensation cases. The governor was asked to furnish to the society a copy of the report, so that he might receive "the facts in refutation of accusations made against medical societies" and to enable the governor "to recommend proper legislation after review of the facts." The society told the governor that it was mailing to him a copy of resolutions adopted February 28, in which recommendations for amendments to the workmen's compensation law were made.

Research Council Chooses Officers.—Dr. Willard C. Rappleye, dean of the Columbia University College of Physicians and Surgeons, on March 8 was reelected chairman of the research council of the Department of Hospitals of the City of New York. Dr. Edward M. Bernecker, commissioner of hospitals, was reelected vice chairman. Other officers include Dr. Alfred E. Cohn of the Rockefeller Institute for Medical Research, treasurer, and Dr. Walter G. Lough, president of the medical board of Goldwater Memorial Hospital, secretary. The council of the Department of Hospitals was set up in 1935 by the late Dr. Sigismund S. Goldwater, then commissioner of hospitals, for the study of chronic disease. The first research unit was set up with the Columbia University College of Physicians and Surgeons and later with New York University College of Medicine. Originally housed in a reconstructed building on Welfare Island, the research activities have been associated with the Goldwater Memorial Hospital since 1941. City funds for the research council have been supplemented by grants from the late Lucius N. Littauer, Marshall Field, the Rockefeller Foundation, Metropolitan Life Insurance Company and others. Among other speakers at the meeting was Comdr. J. Murray Steele (MC), U. S. Naval Reserve, who discussed principles that had been evolved through a research program by the third medical division (New York University) at Goldwater Memorial Hospital, involving the management of a hospital that will permit the study of "patients to become a part and parcel of their care." The principles involve such points as "the selecting of special types of patients for purposes of study, arrangements to meet the necessities involved in long term observations and tests of a variety of patients during the gradual evolution of chronic diseases, collection of data in the social history other than that immediately necessary to determine eligibility for admission or retention, variability and control of diet, importance of postmortem examination, and close liaison with the patient's hospital origin."

NORTH CAROLINA

Commission Named to Study Medical Care.—Mr. Clarence Poe, Raleigh, on February 28 was named chairman of the recently appointed hospital and medical care commission named by the governor to undertake a study of the needs in North Carolina. Mr. Poe was also named chairman of the executive committee, other members of which include James A. Gray, Winston-Salem, vice chairman; Dr. Carl V. Reynolds, Raleigh, secretary; Dr. James W. Vernon, Morganton, Mrs. Julius Cone, Greensboro, Dr. Paul F. Whitaker, Kinston, Thomas Pearsall, Rocky Mount, Charles A. Fink, Spencer, Charles A. Cannon, Concord, C. C. Spaulding and Dr. William M. Coppridge, Durham. At the first meeting of the commission, February 21, Governor Broughton said it was agreed that the program to be studied by the commission should be comprehensive, based on the statement as originally submitted that "the ultimate purpose of this program should be that no person in North Carolina shall lack adequate hospital care or medical treatment by reason of poverty or low income." It was voted to appoint a committee to study similar undertakings in other states, to get a complete record of hospital needs in various areas and counties of the state, to have special studies made of the needs for hospitalization on the part of the Negroes of the state and to get the benefit of information from the county welfare agencies about inadequacy of hospital and medical care in such counties. Newspapers reported that the program, to be supported by state funds and whatever federal funds are available for this purpose, was proposed by the governor in January before the board of trustees of the University of North Carolina and given unanimous endorsement. Governor Broughton recommends that the present two year medical school at the University of North Carolina School of Medicine be enlarged and increased to provide for a full four year medical course, that an adequate hospital be erected at the medical school with a capacity of not less than 600 and preferably 1,000 beds, that the hospital shall be open to patients from all sections of the state with provision for free medical and hospital service to all patients unable to pay for the service and that other hospitals to serve as local medical centers be established in strategic regions of the state.

TENNESSEE

Vanderbilt Confers First Public Health Degrees.—The degree of master of public health was conferred on Dr. Fridgeir Olason and Dr. Fritz Plotke at the graduation exercises recently of Vanderbilt University School of Medicine, Nashville, marking the first time in the history of the university that such a degree has been granted. Dr. Olason came to Vanderbilt in 1942 from Reykjavik, Iceland, and in the same year Dr. Plotke came from the state hospital in Manteno, Ill. The latter received his degree in medicine from the University

of Leipzig in 1934 but came to this country before the outbreak of the war. He is public health physician at the Chicago State Hospital. Dr. Olason received his medical degree at the University of Iceland in 1938. He then served as a public health physician in a rural district in Iceland and is now studying at Harvard in preparation for his degree as doctor of public health. Dr. Olason is a Commonwealth Fund Fellow.

WASHINGTON

Dr. Schwabland Resigns as King County Health Officer.—Dr. Wallace W. Schwabland, Seattle, has resigned as health officer of King County, effective March 1, a position he held for ten years. He will devote his full time to private practice. Newspapers report that Dr. Emil E. Palmquist, Port Angeles, director of health for Clallam and Jefferson counties, will be named to succeed Dr. Schwabland.

WISCONSIN

Information Please.—The Medical Society of Milwaukee County held a program March 10 entitled "Information Please." The theme was "Endocrine and Metabolic Diseases" and the speakers were Drs. Edward H. Ryneerson, Rochester, Minn., Ralph A. Reis, Chicago, and Norbert Enzer and Timothy J. Howard, Milwaukee.

GENERAL

Medical Book Included in Annual Exhibit.—For the first time since its inauguration twenty-two years ago, the annual exhibit of the Fifty Books of the Year includes a medical book, "Biomicroscopy of the Eye," by Dr. Milton L. Berliner, New York. The volume was selected as one of the year's outstanding examples of book making. Designed by Daniel F. Bradley, it was published by Paul B. Hoeber, Inc., New York. In a review of the exhibit in *Publishers' Weekly*, Lewis F. White said: "Biomicroscopy of the Eye" is the bulkiest and heaviest of the Fifty. It is primarily interesting in consequence of the excellent quality of its 500 illustrations, 40 of which are executed in colored colotype of real brilliance of color." The exhibit opened March 1 at the New York Public Library, under the auspices of the American Institute of Graphic Arts.

Special Society Election.—Mrs. Eleanor Brown Merrill, New York, executive director of the National Society for the Prevention of Blindness, has been chosen president of the National Health Council to succeed Dr. George S. Stevenson, New York, medical director of the National Committee for Mental Hygiene. Other officers include Dr. Walter Clarke, New York, executive director of the American Social Hygiene Association, vice president, to succeed Dr. Kendall Emerson, New York, managing director of the National Tuberculosis Association; Maurice A. Bigelow, Sc.D., New York, president of the American Eugenics Society, secretary, and Dr. William F. Snow, chairman, executive committee, American Social Hygiene Association, treasurer. Mrs. Merrill is the first woman to be elected president of the council since its establishment in 1921. The group is a clearing house of twenty voluntary health organizations with headquarters at 1790 Broadway, New York 19.

Another Racket.—A physician writes from Clayton, N. M., that a man giving the name of William E. Burton Jr., Springfield, Mo., reputedly selling magazine subscriptions, called for treatment for an injury to his lower dorsal spine, which, he claimed, was recent. Burton claimed to have been in the St. Louis Children's Hospital seven years previously for lower extremity atrophies following poliomyelitis. The physician reporting this case states that his examination proved that the man had had poliomyelitis and now has a partially useful right leg and a dorsolumbar scoliosis. X-ray films, however, did not indicate any injury for which he was then claiming treatment. Checks were written against the National Circulation Company, Rockefeller Center, New York, in payment of services, but the company writes that William E. Burton Jr. has no connection with the company. The physician reporting this matter states he does not understand the man's racket; he does not seek change and the persons treating him seem to be out only material and service, since the checks were returned "without payment."

Society News.—The American Association of Plastic Surgeons will hold its annual session in Philadelphia, May 5-7. Dr. Frederick A. Figi, 102 Second Avenue S.W., Rochester, Minn., is secretary-treasurer.—The American Nurses' Association, the National League of Nursing Education and the National Organization for Public Health Nursing will meet in Buffalo, June 5-8. The groups will meet respectively at the Hotel Statler, the Hotel Lafayette and Hotel Buffalo. Mrs. Tessa Klein, 181 Franklin Street, Buffalo, is chairman of the committee on general arrangements.—The American

Psychoanalytic Association will hold a special scientific and executive session in Philadelphia, May 14-15. Council meetings are scheduled for May 13. The association will meet in conjunction with the American Psychiatric Association, which this year is celebrating its centennial.—The American Association of Medical Social Workers will hold its annual meeting in Cleveland, May 22, in the Hotel Cleveland.—The American College of Allergists will hold its first annual meeting at the Palmer House, Chicago, June 10-11.

CANADA

Plaque in Memory of Dr. Jabez Elliott.—A portrait plaque of the late Dr. Jabez H. Elliott, professor of the history of medicine, University of Toronto Faculty of Medicine, was unveiled in the Academy of Medicine of Toronto recently. It is the work of Lieut. Cleeve Horne, O.S.A. Dr. Elliott had served in many activities of the academy of medicine but the *Bulletin* of the Academy of Medicine of Toronto paid special tribute to his work as a member of the library committee, which he began in 1912. He died Dec. 18, 1942.

LATIN AMERICA

Health Activities in Latin America.—The governments of Colombia and the Dominican Republic have effected an agreement with the Institute of Inter-American Affairs to continue and extend cooperative health and sanitation programs. Colombia will contribute \$600,000 over a period of two years beginning July 1, and the Dominican Republic will contribute \$150,000 for its program to be expended over a three year period beginning Jan. 1, 1945.

Typhoid Epidemic.—In La Paz, Bolivia, the first case of typhoid in Sopocachi, a section of La Paz, was reported Dec. 11, 1943. On January 23 a total of 137 cases had been reported, of which 80 were hospitalized and the remainder treated in their homes or in private clinics. Twenty-one patients died. The cause of the epidemic had not been determined up to March 1, but it is believed that it was due to use of contaminated water for irrigation purposes. According to the Health and Sanitation Division *Newsletter*, a large of the city of La Paz has no sewerage facilities.

New Construction.—A laboratory is being organized in Cochabamba, Bolivia, near the medical school of the University of Cochabamba, on land donated to the Inter-American Cooperative Health Service by the city of Cochabamba within the property of the Viedma Hospital. The laboratory will be a one story brick structure with facilities for clinical laboratory and diagnoses and for some research in diseases prevalent throughout Bolivia. In Colombia a new building will be erected in University City for the National School of Nursing. In Mitu, Colombia, a hospital is being constructed to consist of two wooden buildings, one to accommodate patients and the other to contain living quarters for the physician, a consulting room and a treatment room. In Ecuador construction was recently started on the Guayaquil Maternity Hospital. The project consists of six buildings. The center of the group is a T shaped two story administrative pavilion, which is flanked by two L shaped two story pavilions for general ward and private patients. There are three one story pavilions for auxiliary services, such as kitchens, laundry, morgue and living quarters for servants and nuns. The buildings will have a total floor area of 40,000 square feet. The hospital will have a capacity of 200 beds. Plans provide for a future extension to the hospital of 100 beds.

Typhus Control.—Fourteen localities in the vicinity of Quezaltenango, Guatemala, were recently visited by one of the mobile units organized under a typhus control project. Thirty-six new cases of typhus were discovered and 9,461 persons were disinfected.

Care for Workers on Military Highway.—The project to provide medical care for workers on the emergency military highway in Guatemala was terminated during October with the closing of the road construction program. In the future, medical care will be provided to workers on the highway through the antimalarial section of the National Public Health Department and through local departmental health officers.

Medical Care for Rubber Workers.—During October 1943 the Institute of Inter-American Affairs and the Rubber Development Corporation entered into an agreement to insure that medical care will continue to be provided for rubber workers in the departments of Peten, Alta Verapaz, El Quiche and Huehuetenango, Guatemala. Most of the rubber to be gathered is in malaria infested areas. For the year Oct. 1, 1943 to Oct. 1, 1944 the Rubber Development Corporation and its agents will provide at cost for the practical doctors employed on the project all essential needs, including food, shelter and lodging, and will also provide free transportation and com-

munication for them while on duty in the rubber areas. In addition to financing the project, the Institute of Inter-American Affairs will provide technical and general supervision of the program.

Personal.—Dr. George C. Dunham, executive vice president of the Institute of Inter-American Affairs and assistant coordinator in charge of the basic economy department, was recently awarded the Southern Cross by the Brazilian government.—Dr. Walter C. Earle, who is serving as consultant to the division of health and sanitation, arrived in Bogota January 27 to assist in the reorganization of the Colombian Department of Health.

Record Rice Crop.—Record production of rice in the Western Hemisphere has provided welcome wartime additions to food supplies and has replaced in a large part former rice imports from the Far East, it is reported, the greatest expansion in rice acreage taking place in Latin America, which before the war bought large quantities of rice from Asia. According to the U. S. Department of Agriculture, rice production in the Western Hemisphere in the past fifteen years has almost doubled, reaching a figure of more than 200 million bushels in 1943, more than one half of which was produced in South America, one third in North America and the remainder in Central America.

Malaria Control Program.—An extensive malaria control program has been in operation in Haiti in cooperation with the Office of the Coordinator of Inter-American Affairs. Malaria swamps have been drained around six coastal communities having a combined population of 200,000. About 20,000 people have been treated for yaws, tropical skin and blood disease, with 15,000 to 20,000 additional treatments being given weekly. In a release, Ralph S. Howard Jr., chief of the U. S. health mission to Haiti, stated on his arrival in Washington that malaria had been reduced to a secondary health problem in Port-au-Prince. This was accomplished, he said, through installation of 15 miles of ditches and canals to eliminate mosquito breeding swamps, including considerable work around the airport. The rest of the malaria control work involved installation of 15 miles of drainage ditches and canals in and around the towns of Petit Goave, Aux Cayes, Cap Haitien, Port de Paix and Mole St. Nicolas. These projects as well as four yaws clinics established are largely in communities from which workers are drawn for rubber and fiber plantations. Mr. Howard reported that Haiti had seventeen specialists making public health studies under the training phases of the inter-American program. Seven of the men are studying at Harvard University, Boston, and ten at the School of Tropical Medicine at San Juan, P. R.

Government Services.

Communities in Need of Physicians

The United States Public Health Service has recently announced that the following two communities have qualified for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of \$200,000 for the relocation of physicians by depositing their required share of the expense money:

Star (Montgomery County), North Carolina.
Hamilton (Harris County), Georgia.

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

Industrial Hygiene Division Reorganized

Under the new plan of administration (*THE JOURNAL*, Dec. 11, 1943, p. 983) the present structure of the industrial hygiene division of the U. S. Public Health Service, with the exception of the research section, becomes a division of the bureau of state services. The research section remains in the National Institute of Health and will be known as the Industrial Research Laboratory. The reorganization of the public health service effected by action of the 78th Congress became operative on December 30. Medical Director James G. Townsend is in charge of the division. Personnel in charge of the sections and units comprising the reorganized industrial hygiene division include:

Medical Director Louis Schwartz, dermatoses section.
Senior Sanitary Engineer J. J. Bloomfield, field operations section.
Surgeon Waldemar C. J. Dressen, medical unit.
Sanitary Engineer (R) Harry E. Seifert, engineering unit.
Principal Statistician William M. Gafafer, statistical unit.
Senior Chemist Frederick H. Goldman, chemical unit.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 19, 1944.

A National Health Service

The white paper on a national health service has at last been issued by the government. It runs to 55,000 words and deals with all the details of a complex problem. The object is to establish a comprehensive health service for all—to ensure that every man, woman and child can get all the advice, treatment and care that may be needed in matters of personal health, that what they get shall be the best medical and other facilities available and that their availability shall not depend on whether or not the people can pay for them or on any other factor irrelevant to the real need.

The government's main reason for recommending changes in medical care is explained by the belief that at this stage of social development the care of personal health should be made available to everybody as a public sponsored service. In spite of the fact that many good services have been built up under public authority by voluntary and private effort, the white paper claims, it is not true that every one can get all the kinds of medical and hospital service he may require. This still depends too largely on where people happen to live, their age or vocation or what happens to be the matter with them. Nor is the care of health wholly divorced from ability to pay, though great progress has been made in this direction. Hospital and specialist services have grown up without a national or even an area plan. One area is well served, another sparsely. One hospital may have a long waiting list, while another not far away could admit patients at once. The time has come, it is concluded, when hospital service must be planned as a whole.

THE SCOPE OF A COMPREHENSIVE SERVICE

The proposed service, it is held, must be comprehensive in two senses—available to all and covering all necessary forms of health care. The whole field of medical advice—at home, in the consulting room, in the hospital or sanatorium or wherever else is appropriate, from personal or family doctor to specialists and consultants of all kinds, from the care of minor ailments to major diseases—must all be covered. It must include ancillary services such as nursing. Every one must be sure of a general medical adviser whom he can consult and, when the need arises, of access to specialists in medicine and surgery. All this cannot be perfected at a stroke of the pen on an appointed day, it is acknowledged, but the framing of such a service must be the aim.

ORGANIZATION OF THE SERVICE

Central responsibility, the government says, must rest in the minister of health, who is answerable directly to Parliament. At his side but independent of him will be created a special professional and expert body—the Central Health Services Council. The council will express the expert view on any general technical aspect of the service. As there cannot be dual responsibility, its work will be consultative and advisory, not executive. The council will be primarily medical in its makeup, because the main technical aspects of the health service will be medical. But it will not be wholly medical, as it will need to express an expert view on many questions—hospital administration, nursing, pharmacy and auxiliary services which involve other experts. The members will be appointed by the minister in consultation with the professional and other organizations concerned.

Local organization must inevitably be more complex, it is pointed out. The new service has to include hospitals and

institutional services for the sick in general, mental cases, infectious diseases, tuberculosis, maternity care and every other general and special need. It has to include the many kinds of service provided in local clinics, a family doctor service and many ancillary services such as nursing, health visiting and midwifery. It must range from the one extreme of highly specialized services requiring relatively few centers for the country as a whole to the other extreme involving a large number of local clinics and arrangements for care in the individual home. Suggestions have been made too for a completely new kind of local authority—sometimes proposed as a vocational or technical body like the special kind of central advisory organization mentioned. Both the principles applied to the central organization—democratic responsibility and professional guidance—apply to local as well as national organization.

GENERAL PRACTITIONER SERVICE

The arrangements for general medical practice are stated to be the most important part of the proposals for a national health service. The family doctor is the first line of defense in the fight against ill health, and it is through him that access will be had to other forms of treatment. Every one must be free to choose the doctor whom he consults from among those available. The fact that a public organization ensures the doctor's services must not destroy the sense of choice and the personal association which is at the heart of family medical care. The doctor must remain free to direct his clinical knowledge and personal skill as seems to him best. A system by which he becomes simply an employee of the local authority has been suggested, but opinion is sharply divided as to this. Many experienced and highly skilled doctors would refuse to be so employed, because they would lose their freedom. Others would welcome the system. The government has decided that the change to such a system would be too abrupt and is unnecessary. An extension of the present panel system has been suggested, but the government finds two reasons against this. First, it gives no effective means of ensuring a proper distribution of doctors. Second, developments in the modern technic of medical practice point to the need for change in any future system. A recent report of the Medical Planning Commission of the British Medical Association states "The days when a doctor armed with his stethoscope and his drugs could offer a fairly complete medical service are gone. For efficient work he must have at his disposal modern facilities for diagnosis and treatment, and often these cannot be provided by a private individual." The organization of general practice on a group or cooperative basis is then suggested. The government fully agrees and places group practice in the forefront of the plans. Hence the intention is to establish "health centers" specially designed and equipped for collaboration of the group. The centers will comprise individual consulting rooms, reception and waiting rooms and rooms for simple laboratory work, nursing and secretarial staff and facilities for minor surgery.

PRIVATE PRACTICE

It is hoped that the great majority of doctors will take part in the new service, and therefore it is not proposed to prohibit doctors who enter the service from treating in their private practices any patients who do not desire to take advantage of the new public arrangements. But it will be necessary to see that the interests of patients in the public service do not suffer thereby. This will be done by reducing as may be required the number of persons a doctor is permitted to have "on his list" under the new scheme and so reducing his remuneration from public funds. There is held to be a strong case for requiring young doctors when they leave hospitals and enter the public service to go through a short period as assistants to more

experienced practitioners. The government proposes to do this and also to require the young doctor during his early years to give all his time to the public service when this is needed.

HOSPITALS

A fully organized system of hospitals will be the keynote of the national health service. The new hospital service must be complete and ready of access. It must include general and special hospitals, infectious disease hospitals, sanatoriums for tuberculosis, accommodations for maternity care and the chronically sick, and for rehabilitation. Ancillary hospital services such as pathologic and x-ray examination, electrotherapy and ambulance must also be provided. The voluntary hospital is the oldest type of institution established here and is the basis of the medical schools. The government desires the fullest cooperation between voluntary hospitals and the steadily developing system of hospitals provided by the local authorities, which will be part of the health service.

CONSULTANTS

The greatest gap in the health services provided by the present national health insurance scheme is the lack of a consultant service. This will be provided under the new program. It can best be based on the hospital services. The main consultant facilities now are inevitably concentrated at the medical teaching centers. The consultant service still needs to be organized with the teaching center as its focus, but it must be spread over a wider area by encouraging consultants taking part in to live and work further afield. Their function will normally be of regular and frequent visits for consultation to both major hospitals and the outlying general practitioner hospitals and also to the health centers and clinics and, in case of need, to the patient's home at the request of the general practitioner. Remuneration can be on either a full time or a part time salary basis.

THE REACTION OF THE MEDICAL PROFESSION

As the white paper has only just been published, the medical journals have not yet been able to comment, but the British Medical Association immediately issued to the press an official statement which described the physicians' reaction as a "cautious welcome." The association states that the medical profession is in the fullest sympathy with the government's objective to make available to everybody who needs it, irrespective of age, sex or occupation, an equal opportunity to take advantage of a comprehensive health service. The profession accepts the principles laid down by the government of freedom to use or not to use the service and freedom for doctors to work inside the service, outside the service, or both. The profession welcomes the general policy of building on existing foundations, of welding together what is already there, adapting and adding to it, until a comprehensive service is achieved, however long that may take. But many points remain to be clarified, such as the experimental character of the health centers, the relation of individual family doctors to hospitals, the mode of appointing and distributing consultants, the compensation for loss of capital value of general practices, the machinery by which the public will intimate its desire to avail itself of the service in whole or in part, the future of voluntary hospitals and contributory schemes and the functions of the proposed Central Medical Board. The profession sympathizes too with the government's desire to secure an equitable distribution of doctors. But, in the public interest, individual doctors must be protected from unwarranted or unnecessary interference with the type or place of their practice. No attempt must be made, it is held, to regiment the profession by imposing on new entrants conditions which encourage the development of a whole time, state salaried

service. No rigid form of health center organization should be established until widespread experiment has been undertaken. In sum, the white paper is thought to provide a framework within which it is possible to evolve a good, comprehensive medical service, though its worth to the public and acceptability to the profession will depend on the clarification and negotiation of many important points.

Although the new service builds on the past, it profoundly alters the whole structure of medical practice. At first the profession was confronted with the danger of a whole time service, so that doctors would become simply government servants and medical practice would be a branch of the civil service. But the firm resistance of the representatives of the profession, in conferences with the government, averted this danger and also maintained the right to practice outside the service. Though in favor of reform, the profession—excepting a minority of socialists—was averse to such drastic change as was proposed. But the government has considered the views of the profession in everything and given way on the two fundamental points mentioned. The proposals have to be discussed by Parliament and no doubt will be further modified. In the solution of difficulties the characteristically English method of compromise, already in evidence in the white paper, will come into play.

Martyrs to the X-Rays

The unveiling of a tablet at the London Hospital to the memory of four pioneers in the use of x-rays recalls the danger encountered before the need for precautions was understood. The tablet was unveiled by Dr. J. H. Sequeira, the dermatologist under whom they worked. Ernest Harnack began taking photographs in 1896 with a primitive apparatus. He was the first member of the hospital staff to suffer from x-ray dermatitis and had to relinquish his work in 1909. In spite of grave mutilation, he lived until 1943, dying at the age of 72. Ernest Wilson joined the staff in 1899 and after only a year contracted dermatitis of the fingers. He continued to work until 1904 but died of rapid cancer in the following year at the age of 39. Reginald Blackall joined the staff when only 18 and was successful in the treatment of ringworm in children. With Dr. Sequeira he carried out experiments in the use of x-ray filters. In 1925 he succumbed to cancer at the age of 44. When Harold Suggars joined the hospital in 1903 some of the risks of exposure to x-rays were known, and he was the first worker to wear lead-lined gloves and body protection. But he developed cancers on the trunk, face and eyelid and finally became almost totally blind from double cataract. He died in 1943, showing amazingly cheerful patience and courage. The tablet is in the x-ray department and reads "These four friends, as pioneer radiographers, devoted their lives to healing. Their work in the development of the x-rays cost them their health. This they gladly gave in the service of the London Hospital."

Marriages

EDWARD F. FLEMING, St. Paul, Neb., to Miss Elizabeth Delores Kelly of Omaha, February 21.

AUGUSTA HOLMSTOCK, Philadelphia, to Mr. Jacob J. Kressler of Worcester, Mass., December 31.

SAM GAINES STUBBINS JR., Birmingham, Ala., to Miss Billie Jane Malm of Cleveland, February 29.

BRUCE JOHN BREWER, Milwaukee, to Miss Kathryn Tilley in Fairfield, Ohio, February 12.

ROSCOE L. FISHER to Miss Frances L. Kelly, both of York, Pa., February 19.

HAROLD S. RAFAL to Miss Sheila H. Kirmayer, both of New York, March 4.

Deaths

George L. Le Fevre ☉ Muskegon, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1891; in 1933 president of the Michigan State Medical Society and for many years councilor of the eleventh district; president of the Muskegon County Medical Society in 1905 and again in 1922; medicolegal adviser of the society for many years; formerly a member, and president of the Michigan State Board of Registration in Medicine for sixteen years; fellow of the American College of Surgeons; identified with the Mercy Hospital as president, chief of staff, chairman of the advisory committee and chief emeritus; in 1936 a life sized oil portrait of him was presented to the hospital in appreciation of his many years' service; on the staff of the Hackley Hospital; for many years president of the board of trustees of the Muskegon County Sanatorium; in 1920, as a member of the city commission, served on the county board of supervisors; at one time city and county physician; a member of the board of directors of the Union National Bank since 1911 and president from 1923 until the bank was merged with the Hackley National Bank to form the Hackley Union National Bank, where he had been chairman of the board since 1928; in 1942 made a Knight of St. Gregory by Pope Pius XII; served as vice chairman of the board of trustees for Muskegon County Museum and as president of the Muskegon Industrial Foundation; member of the Rotary Club; died March 3, aged 78, of influenzal pneumonitis.

William Gray Turnbull ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; assistant professor of medicine at his alma mater; became medical director of the Pennsylvania State Sanatorium for Tuberculosis number 2, Cresson, Pa., when it was established in 1912 and remained there for many years; formerly deputy state secretary of health with supervision over several state sanatoriums; served as a member of the advisory board of the state department of health; presented with the Strittmatter Award by the Philadelphia County Medical Society in 1937; during World War I was in charge of the General Hospital at Waynesville, N. C., with rank of lieutenant colonel; lieutenant, medical reserve corps, U. S. Army, not on active duty; since 1928 superintendent of the Philadelphia General Hospital where he died while walking through the grounds, March 11, aged 67, of heart block.

Radie Garfield Snyder ☉ New York; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1904; member of the American Rheumatism Society and the New York Academy of Medicine; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; at one time assistant clinical professor of medicine at the Columbia University College of Physicians and Surgeons; professor of medicine at the New York Polyclinic Medical School and Hospital, 1922-1923; for many years chief of the arthritis clinic at the Hospital for Ruptured and Crippled, now known as the Hospital for Special Surgery; served on the staffs of the New Rochelle Hospital, New Rochelle, Jamaica Hospital, Jamaica, and St. Agnes Hospital, White Plains, N. Y.; died February 25, aged 63, of gastric ulcer.

William Mann Randolph, Charlottesville, Va.; University of Virginia Department of Medicine, Charlottesville, 1890; member of the Medical Society of Virginia; captain of Troop K, Albemarle Light Horse, from 1892 to 1897, and a major in the 17th Infantry, Virginia Volunteers, 1898 to 1904; served as a major in the medical corps of the U. S. Army during World War I; at one time adjunct professor of surgery and instructor in genitourinary surgery at his alma mater; formerly on the staffs of the Calumet and Arizona Hospital Department and the Copper Queen Hospital, Bisbee, Ariz.; served as a member of the school board of Tombstone, Ariz.; clinician with the outpatient department, tuberculosis control, Virginia Department of Health, Richmond; died January 25, aged 74, of heart disease.

Edward Everett Webber, Duluth, Minn.; Jefferson Medical College of Philadelphia, 1902; member of the Minnesota State Medical Association; fellow of the American College of Surgeons; served as president of the West Duluth Business Men's Club and as a member of the chamber of commerce; chief surgeon for the Duluth, Missabe and Iron Range Railway; served as mayor of Chisholm and as health officer of Mountain Iron and Kinney; formerly president of the school board of Buhl; member, attending staff, St. Luke's and St. Mary's hospitals; surgeon in charge and owner of the Webber Hospital, where he died January 17, aged 65, of influenzal bronchopneumonia and chronic cirrhosis of the liver.

Charles Frederick Baker ☉ Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1902; member of the Radiological Society of North America, Inc., and the American College of Radiology; specialist certified by the American Board of Radiology, Inc.; on the staffs of the East Orange General Hospital, East Orange, Essex Mountain Sanatorium, Verona, Irvington General Hospital, Irvington, Orange Memorial Hospital, Orange, Fitkin Memorial Hospital, Neptune, Babies Hospital-Coit Memorial, Newark Eye and Ear Infirmary, Presbyterian Hospital and the Hospital of St. Barnabas and for Women and Children, where he died March 6, aged 67.

Fred Maurice Spalding, Boston; Harvard Medical School, Boston, 1897; member of the Massachusetts Medical Society and the American Ophthalmological Society; member and past president of the New England Ophthalmological Society; instructor in ophthalmology at his alma mater from 1902 to 1920; recently returned to work in the clinic and for many years ophthalmic surgeon, chief of the ophthalmic service and consulting ophthalmic surgeon, Massachusetts Eye and Ear Infirmary; for many years visiting ophthalmologist at the New England Deaconess Hospital and the New England Baptist Hospital, where he died January 24, aged 73, of pneumonia.

William H. Williams ☉ Lebanon, Ind.; Medical College of Indiana, Indianapolis, 1897; formerly councilor of the Ninth District of the Indiana State Medical Association and secretary of the Boone County Medical Society; fellow of the American College of Surgeons; president of the Business and Professional Men's Realty Company and vice president and director of the Union Federal Savings and Loan Association; at one time medical director and owner of the Williams Hospital, now known as the Witham Memorial Hospital, where he was a member of the staff and where he died January 13, aged 75, of intestinal obstruction and paralytic ileus.

Henry Richmond Slack, La Grange, Ga.; Atlanta Medical College, 1891; member of the Medical Association of Georgia; also a pharmacist; past president of the La Grange Medical Society; co-founder and for many years president of the Georgia Pasteur Institute, Atlanta; at one time physician in charge of the La Grange Sanatorium; co-founder of the public school system; from 1886 to 1898 secretary of the Georgia State Board of Pharmacy; life member of the Georgia Pharmaceutical Association; died in the Emory University Hospital, Emory University, January 16, aged 81, of pneumonia and uremia secondary to sulfonamides.

Richard Dunckley Sessions ☉ Natchez, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; member of the Southeastern Surgical Association; fellow of the American College of Surgeons; served as vice president of the Mississippi State Medical Association, president of the Adams County Medical Society and the Homochitto Valley Medical Society; visiting surgeon, Natchez Sanatorium; surgeon, Natchez and Southern, Yazoo and Mississippi Valley and Mississippi Central railways and the Missouri Pacific Railroad Company; died January 24, aged 74.

Roy Wilton Dunlap ☉ Tulsa, Okla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1901; past president of the Anderson (Texas) County Medical Society and the Tulsa County Medical Society; served in the medical corps of the U. S. Army during World I; instructor in anatomy at his alma mater from 1902 to 1904; at one time on the staff of the International and Great Northern Railroad Employees' Hospital, Palestine, Texas; past president of the Rotary Club of Palestine; examining physician at the city induction center; died January 29, aged 65.

Isaac Preston Seiler ☉ Piketon, Ohio; Ohio Medical University, Columbus, 1900; served as mayor of Piketon; for many years councilor of the Ninth District of the Ohio State Medical Association; formerly secretary of the Pike County Medical Society; executive secretary of the Pike County Republican Committee; for many years president of the school board of Piketon; served as a lieutenant in the medical corps of the U. S. Army during World War I; died in the Mercy Hospital, Portsmouth, January 25, aged 66, of aneurysm of the heart.

Linda Gage Roth, Battle Creek, Mich.; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1904; formerly dean of the Kellogg School of Physical Education and later dean of women and school physician, Battle Creek College; a charter member and past president of the Altrusa Club; served as president of the Michigan Student Health Association and as a member of the American Association of University Women; formerly on the staff of the Battle Creek Sanatorium; died January 11, aged 70, of myelogenous leukemia.

Halbert Hammond Acker, Anderson, S. C.; Medical College of the State of South Carolina, Charleston, 1912; member of the city board of health; on the staff of the Anderson County Hospital; died January 20, aged 56, of heart disease.

Arthur Robert Adams Ⓢ Macomb, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; on the staff of the Phelps Hospital; died in St. Francis Hospital, Peoria, January 21, aged 74, of uremia.

Jasper M. Adams, Canton, Ill.; American Medical College, St. Louis, 1889; member of the Illinois State Medical Society; died in the Graham Hospital, Canton, January 24, aged 84, of chronic valvular heart disease and cardiac decompensation.

Yves Ardoin, Ville Platte, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1908; fellow of the Royal Institute of Public Health and Hygiene of London, England; charter member of the local Rotary Club, of which he was past president; owner of the Ardoin Sanitarium and Clinic; died January 20, aged 63.

Charles Henry Artz, Marion, Ohio; Michigan College of Medicine and Surgery, Detroit, 1893; died November 27, aged 77, of valvular insufficiency.

William James Astrapp, South Pittsburg, Tenn.; Meharry Medical College, Nashville, 1908; died suddenly January 10, aged 60.

Novatus Lee Barker, West Point, Ga.; Emory University School of Medicine, Atlanta, 1917; member of the Medical Association of Georgia; formerly on the staffs of the Wesley Memorial, Grady and Piedmont hospitals, Atlanta, and Coleman Sanatorium, Eastman; died in Fountain City, Tenn., January 19, aged 79, of heart disease.

Carlton M. Beebe, Sparta, Wis.; Rush Medical College, Chicago, 1889; College of Physicians and Surgeons, New York, 1891; served during World War I; captain, medical reserve corps, U. S. Army, not on active duty; formerly a member of the Sparta Clinic; on the staffs of the Monroe County Insane Asylum and St. Mary's Hospital; attending physician, state public school; a director of the Farmers National Bank and president of the city water commission; died January 21, aged 77, of uremia.

Kurt Friedrich Behne Ⓢ Los Angeles; Vereinigten Friedrichs-Universität Medizinische Fakultät, Halle-Wittenberg, Prussia, Germany, 1908; member of the Radiological Society of North America, Inc.; formerly assistant professor, University Woman's Hospital, Erlangen, Bavaria; died January 15, aged 58.

William Herron Cameron, Daytona Beach, Fla.; Western Pennsylvania Medical College, Pittsburgh, 1899; fellow of the American College of Physicians; one of the charter members of the American Radium Society; recording secretary of the Allegheny County (Pa.) Medical Society in 1911 and 1912 and assistant secretary and manager of sessions and exhibits of the Medical Society of the State of Pennsylvania from 1914 to 1919; died January 27, aged 69.

Thomas Lynch Coll, Cambridge, Md.; Baltimore Medical College, 1909; member of the Medical and Chirurgical Faculty of Maryland; physician for the county draft board; for many years county coroner; served as county and federal jail physician; member of the Lions Club; on the staff of the Cambridge-Maryland Hospital; died January 4, aged 58.

Montgomery Adams Crockett, Cambridge, Mass.; Bellevue Hospital Medical College, New York, 1886; formerly adjunct professor of surgery and clinical gynecology at the University of Buffalo Medical Department; served on the staffs of the Buffalo General and Riverside hospitals, Buffalo; died January 7, aged 83, of arteriosclerotic heart disease.

Gordon Ambrose Dockery Ⓢ Franksville, Wis.; Rush Medical College, Chicago, 1936; killed when the automobile in which he was driving was struck by a train, January 6, aged 32.

David Beale Ealy, Moundsville, W. Va.; Maryland Medical College, Baltimore, 1912; member of the West Virginia State Medical Association; president of the Marshall County Medical Society; for ten years coroner of Marshall County; served during World War I; elected a member of the West Virginia Senate from the second district in 1938 and served during the regular sessions in 1939 and 1941; died February 24, aged 55, of heart disease.

Donald Maurice Gildersleeve, New York; Long Island College Hospital, Brooklyn, 1912; served overseas during World War I; formerly demonstrator of anatomy at his alma mater; at one time attending surgeon on the staff of the Hospital of St. Giles the Cripple, Brooklyn; died in the Veterans Administration Facility January 18, aged 54.

Edwin Johnson Gillette, Londonderry, N. H.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; member of the New Hampshire Medical Society; died in West Windham recently, aged 79, following an operation for hypertrophy of the prostate.

Horace L. Goodman Ⓢ Ronceverte, W. Va.; Medical College of Virginia, Richmond, 1901; past president of the Greenbrier Valley Medical Society; served as vice president of the West Virginia State Medical Association and since 1941 as councilor of the Sixth District; fellow of the American College of Surgeons; served as attending specialist (surgery) U. S. Public Health Service at Alderson; surgeon in charge and superintendent of the Greenbrier Valley Hospital; died February 28, aged 67, of cardiac decompensation.

Charles Graef, New York; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1896; member of the Medical Society of the State of New York; formerly professor of ophthalmology at the Fordham University School of Medicine; consultant ophthalmologist for the medical advisory board during World War I; consultant ophthalmologist at the Lincoln Hospital; consultant ophthalmologist and otologist, Fordham Hospital; died February 27, aged 72, of chronic myocarditis, coronary sclerosis and cerebral thrombosis.

William Peter Grimaud, Medford, Okla.; Barnes Medical College, St. Louis, 1906; died in an Enid hospital January 6, aged 60.

Andrea E. Hall, Virginia, Minn.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1897; assistant city health officer; at one time company doctor for the Virginia and Rainy Lake Lumber Company at Cusson; died January 13, aged 69.

James White Handly, Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1887; member of the Tennessee State Medical Association; fellow of the American College of Surgeons; formerly professor of genitourinary diseases at his alma mater; at one time medical director of the Independent Life Insurance Company; for many years chief surgeon for the Tennessee Central Railway; died in St. Thomas Hospital January 6, aged 77.

Arthur Ceberry Haney, Russellville, Ark.; University of Oklahoma School of Medicine, Oklahoma City, 1914; member of the Arkansas Medical Society; past president of the Pope County Medical Society; served during World War I; medical director and owner of the Haney Eye, Ear, Nose and Throat Hospital; died suddenly December 22, aged 54.

Charles Daniel Holliger Ⓢ Stockton, Calif.; University of California Medical School, San Francisco, 1916; member of the Radiological Society of North America, Inc.; died in the Dameron Hospital December 13, aged 60.

Clarence Albert Holmes, New York; Columbia University College of Physicians and Surgeons, New York, 1904; member of the Medical Society of the State of New York; served on the staffs of the Fordham Hospital and the Union Hospital, where he died January 27, aged 64.

O. B. Humston, Franklinton, Ky.; Louisville Medical College, 1880; died in December, aged 87.

Isaac S. Hunt, Freedom, Okla. (licensed in Oklahoma under the Act of 1908); member of the Oklahoma State Medical Association; died recently aged 82.

James Edgar Jeffery, Ordway, Colo.; Ensworth Medical College, St. Joseph, Mo., 1899; served as county coroner and health officer of the town of Ordway; for many years local physician for the Missouri Pacific Railroad; died December 21, aged 74.

Theresa Kline Jennings, Streator, Ill.; Dunham Medical College, Chicago, 1901; served as health officer; died January 6, aged 76.

Edward Townsend Jones, Atlantic City, N. J. (licensed in Ohio in 1896, and New York in 1903); died in the New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives and Widows, Vineland, December 30, aged 94, of pneumonia.

Peter Wilson Leitzell, Benton, Wis.; Jefferson Medical College of Philadelphia, 1896; member of the State Medical Society of Wisconsin; county coroner for many years; died January 5, aged 68.

John Edward Lind, Washington, D. C.; George Washington University School of Medicine, Washington, 1909; specialist certified by the American Board of Psychiatry and Neurology, Inc.; clinical professor of psychiatry at his alma mater; on the staff of St. Elizabeths Hospital; was shot and killed February 21, aged 55.

John Philip Lobenhoffer, San Anselmo, Calif.; Tennessee Medical College, Knoxville, 1894; died December 26, aged 74.

Charles L. Moore * Cleveland; Cleveland Homeopathic Medical College, 1899; served in the medical corps of the U. S. Army during World War I; member of the Milk Commission of Cleveland; for many years on the staff of the Grace Hospital; on the staff of the Huron Road Hospital, East Cleveland; instantly killed when the automobile in which he was driving was struck by a train, January 6, aged 70.

John William Philpott, Fort Madison, Iowa; College of Physicians and Surgeons, Keokuk, 1878; University of Vermont College of Medicine, Burlington, 1884; formerly physician in charge of the Iowa State Penitentiary Hospital; died in the Sacred Heart Hospital January 8, aged 87.

Marcus Rice Piersol, Cairo, Neb.; Lincoln Medical College, 1901; died January 13, aged 72, of heart disease.

Oscar R. Quaintance, Slate Mills, Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1873; member of the Medical Society of Virginia; served as president of school board; died January 3, aged 93, of pneumonia following influenza.

Clifford Bertram Rowell, Buffalo; Detroit College of Medicine, 1894; University of Buffalo School of Medicine, 1895; died December 31, aged 75.

Onal Arthur Sale * Neosho, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1917; member of the Radiological Society of North America, Inc.; part owner and medical director of the Sale-Bowman Hospital; died in the Freeman Hospital, Joplin, January 27, aged 52, of coronary occlusion.

Joel E. Saunders, Grasscreek, Ind.; Curtis Physio-Medical Institute, Marion, 1895; died in St. Joseph Hospital, Logansport, January 11, aged 71.

Vincenzo Armando Savoia, Brooklyn; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1902; member of the Medical Society of the State of New York; formerly a member of the board of education; served in the nose, ear and throat clinic of the Lutheran Hospital and as attending physician, Unity Hospital; died January 19, aged 67, of coronary thrombosis.

John William Schelpert, St. Petersburg, Fla.; Bellevue Hospital Medical College, New York, 1889; died January 13, aged 85, of coronary occlusion.

Frank L. Secoy * Sioux City, Iowa; State University of Iowa College of Medicine, Iowa City, 1911; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served during World I; for many years on the staff of St. Vincent's Hospital; on the staff of Methodist Hospital; died January 23, aged 57, of injuries received in a collision between the automobile in which he was driving and a street car.

William Albert Sibbett, Douglas, Ga.; Atlanta School of Medicine, 1910; University of the South Medical Department, Sewanee, Tenn., 1909; honorary member of the Medical Association of Georgia; served in the medical corps of the U. S. Army during World War I; died in the Veterans Administration Facility, Atlanta, December 7, aged 58.

Benjamin W. Slover, Blanchard, Okla.; Barnes Medical College, St. Louis, 1901; member of the Oklahoma State Medical Association; president of the McClain County Medical Society; past president of the Blanchard Lions Club; died in the Wesley Hospital, Oklahoma City, January 8, aged 70, of heart disease.

George Adam Smith, Black Creek, N. C.; Louisville Medical College, Louisville, Ky., 1887; died in Fremont January 7, aged 84, of angina pectoris.

Demetrius Staneff * Chicago; Cincinnati College of Medicine and Surgery, 1892; died in the Wesley Memorial Hospital January 2, aged 81, of chronic myocarditis and pneumonia.

Morris Dan Stepp * Cleveland; Western Reserve University Medical Department, Cleveland, 1893; formerly assistant clinical professor of surgery at his alma mater; specialist certified by the American Board of Surgery; fellow of the

American College of Surgeons; consulting surgeon, St. Luke's Hospital; chief surgeon, Pennsylvania Railroad; consulting surgeon, New York Central Railroad; died in East Cleveland, Ohio, January 14, aged 71, of coronary thrombosis.

Thomas Hill Stewart Jr. * Lieutenant Colonel, U. S. Army, retired, Eastman, Ga.; Atlanta Medical College, 1914; Army Medical School, 1924; entered the medical corps of the U. S. Army as a first lieutenant in 1920; promoted as a captain, a major and in 1937 as a lieutenant colonel; retired August 31, 1941; served during World War I; on the staff of the Coleman Sanatorium; died in Savannah January 6, aged 51, of coronary thrombosis.

John Wallace Stokes * Southold, N. Y.; Jefferson Medical College of Philadelphia, 1904; chairman of the board of Southold Park Commissioners and president of the board of the Southold Library; past president of the Eastern Long Island Hospital Association; on the staff of the Eastern Long Island Hospital, Greenport, where he died January 12, aged 65, of uremia.

Arthur Lile Stone, Camden, N. J.; Boston University School of Medicine, 1898; member of the Medical Society of New Jersey; director of public health for Camden; formerly health officer of Pittsfield, Mass.; served during World War I; past president of the New Jersey Health Officers' Association; died February 17, aged 70, of heart block.

William Henry Sullivan, Cleveland, Tenn.; Chattanooga Medical College, 1899; member of the Tennessee State Medical Association; served as Bradley County physician; on the staff of the Physicians and Surgeons Hospital; died January 15, aged 73, of coronary thrombosis.

J. William Trisler, Glendale, Ohio; Jefferson Medical College of Philadelphia, 1884; died January 18, aged 85, of senility.

Ralph Randolph Trueblood, Lawrenceville, Ill.; Hospital College of Medicine, Louisville, Ky., 1896; member of the Illinois State Medical Society; surgeon for the Baltimore and Ohio and New York Central lines; served during World War I; for many years physician for the Indian Refining Company; secretary and past president of the Lawrence County Medical Society; a charter member of the Rotary Club; died January 6, aged 69.

Joseph William Walsh, Rockville Center, N. Y.; Long Island College Hospital, Brooklyn, 1897; died January 1.

Morton Smith Wardner, Lackawanna, N. Y.; Rush Medical College, Chicago, 1884; died in Chicago in December, aged 93.

Rufus Clyde Webb, Rayne, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1912; died in a hotel at Birmingham, Ala., January 4, aged 55, of coronary thrombosis.

George M. Woodman, Westbrook, Maine; Medical School of Maine, Portland, 1897; member of the Maine Medical Association; served as a member of the board of health of Westbrook; past president of the Cumberland County Medical Society; charter member of the Rotary Club; medical superintendent of the Westbrook Hospital; died January 27, aged 71, of heart disease.

William Byrd Young, Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1888; a charter member and past president of the White County Medical Society; a charter member of the Upper Cumberland Medical Society; for many years an official of Tennessee Products Corporation; died January 3, aged 78.

KILLED IN ACTION

Anthony John Gramling, Milwaukee; Marquette University School of Medicine, Milwaukee, 1940; formerly resident physician at the Columbia and Milwaukee Children's hospitals; commissioned a first lieutenant on Feb. 2, 1942 and later promoted to captain in the medical corps, Army of the United States; killed in action in Italy, January 10, aged 29.



CAPT. ANTHONY JOHN GRAMLING,
M. C., A. U. S., 1914-1944

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the
Food and Drug Administration of the
Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form. (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Betene—L. H. Stewart Corporation, Rochester, N. Y. Shipped Nov. 5, 1941. Composition essentially a mixture of dried skim milk, dried egg yolk, soy bean tissues, wheat bran, wheat germ, salt, agar agar, calcium phosphate, chondrus (Irish moss) and saccharin, flavored with cocoa, vanilla and coumarin, together with certain added vitamin substances. Misbranded because label falsely suggested that when consumed as directed, product would increase weight, give vigor and vitality to the user, and constitute a sure, safe and effective way to reduce—[D. D. N. J., F. D. C. 732, April 1943] Also misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 3840.

Cook's Laxative Cold Breakers—Thomas E. Cook Chemical Company, Frederick, Md. Shipped Sept. 16, 1941. Composition in each tablet 1 grain of acetophenetidin, 0.26 grain of eucalyptus sulfate and unreported amounts of camphor, aloin, podophyllin and cayenne pepper. Misbranded because of false and misleading label representations that product was a remedy for colds and accompanying ailments. Further misbranded because of label claim, "They Contain No Quinine," whereas product did contain eucalyptus, a eucalyptus alkaloid which has properties generally similar to those of quinine. Also misbranded because the concern maintained no laboratory in spite of this intimation in its name, but merely repackaged medicines made in other establishments—[D. D. N. J., F. D. C. 735, April 1943].

Dromgooles Bitters—McCullough Drug Company, Lawrenceburg, Ind. Shipped Jan. 2, 1942. Composition extracts of plant drugs, including a laxative and an alkaloid bearing drug, with iron and ammonium citrate, alcohol and water. Misbranded because labeling failed to give directions for use and because of false and misleading label statements. "Bitters. Uterine Tonic, Sedative and Antispasmodic Aid in the relief of Periodic Pain and Distress." [D. D. N. J., F. D. C. 705, April 1943].

Endocrine Extract Formula Nos. 2, 131 and 157—Bleything Laboratories, Los Angeles. Shipped between Oct. 17, 1940, and July 2, 1941. Formula No. 2 adulterated because strength differed from and quality fell below representation of 33 cc., 3 mg. of the crystalline principle of thyroid and 20 mg. of the crystalline principle of entire ovary, whereas it contained no detectable amount of these ingredients. Formula No. 131 adulterated because strength differed from and quality fell below label representations of 33 cc., 3 mg. of the crystalline principle of thyroid and 10 mg. of the crystalline principle of the male orchic gland, since the presence of neither was detectable. Formula No. 157 adulterated because strength and quality fell below label representation of 33 cc., 3 mg. of crystalline principle of thyroid, 10 mg. of crystalline principle of the pineal gland and 5 mg. of the crystalline principle of the male orchic gland, none of which were detectable. All three products misbranded because of false and misleading label declaration regarding these drugs—[D. D. N. J., F. D. C. 717, April 1943].

Estromone—Endo Products, Inc., Richmond Hill, N. Y. Shipped between Dec. 28, 1939, and Nov. 20, 1940. Adulterated because strength and quality fell below label representations that the tablets possessed a biologic activity equal to 2,000 international units of estrogenic hormone, whereas some of them did not—[D. D. N. J., F. D. C. 719, April 1943].

Hill's Swabbed Applicators with Tongue Blade—Wetmore Centaur Corporation, New York. Shipped Nov. 27, 1941. Adulterated because purity fell below its declared standard, since it was designated "sterilized," whereas it was not sterile, but was contaminated with aerobic, anaerobic or facultative anaerobic micro organisms. Misbranded because of false and misleading representations that the product was sterilized, and the claims "The Modern Way of Treating sore throats, cuts, wounds, ear and nose ailments. The Ideal Way of safeguarding your health. For eye ear and nose treatment. Especially useful to mothers treating infants. Specially made for Throat Treatment."—[D. D. N. J., F. D. C. 700, February 1943].

Hi-V Vitamins—Hi-V Vitamin Corporation, New York. Shipped Jan. 19, 1942. Misbranded because label bore false and misleading claims regarding efficacy of the product in restoring and maintaining health and preventing or correcting disease conditions, and represented that it con-

tained all the vitamins essential in normal nutrition, whereas it did not contain riboflavin or nicotinic acid, two substances whose absence from the diet may cause vitamin deficiency diseases. Further misbranded because of false and misleading representations in accompanying circular that the average individual requires vitamin supplements of this type to obtain maximum health, and that he is likely to be suffering from lack of vitality, energy, appetite and proper digestion because of inadequate vitamin intake from his food, that consumption of this product as directed would in most cases prevent or correct the disease conditions resulting from inadequate vitamin intake, and that it contained all the vitamins essential in normal nutrition, whereas it did not—[D. D. N. J., F. D. C. 691, February 1943]. Also misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 3644.

Lash's Bitters—Lash, Inc., Anaheim, Calif. Shipped Oct. 27, 1941. Composition essentially a water alcohol extract of laxative plant drugs such as cascara sagrada and senna. Misbranded because of false and misleading label representations that it was a regulator, an adequate remedy for indigestion, headaches, and loss of appetite arising from imperfect digestion, and a proper treatment for chronic constipation, and that it would not cause the harsh after effects which may accompany cathartics nor would its continued use be likely to result in a dependence on laxatives to move the bowels—[D. D. N. J., F. D. C. 689, February 1943].

Renal Pomade—Frederick Godfrey, trading as Adams Products Company, Adams, N. Y. Shipped May 14, 1940. Composition an amber colored ointment containing betanaphthol and volatile oils with cedar like odor, incorporated in a base consisting chiefly of petrolatum and a smaller amount of fatty material. Misbranded because label represented that when used alone or in conjunction with certain pulling, massaging and kneading treatments, preparation would produce beneficial effects in treatment of baldness and falling hair, whereas government charged it would not—[D. D. N. J., F. D. C. 731, April 1943].

Savol and Savol Cream—Savol Chemical Company, Mercer, Pa. Shipped between June 23 and August 13, 1941. Composition Savol essentially cresols, alkali soaps and water, Savol Cream, essentially zinc oxide, barium sulfate, petrolatum and perfume materials. The first named was misbranded because of false and misleading label representations that it would be effective in protecting against and preventing serious infection and treating bites of animals, open sores, irritation of throat or nasal passages arising from catarrh, hay fever or kindred ailments, would minimize the possibility of infected sores, abscesses, boils, felonies and all complications due to infections, and always be helpful and often curative. Savol Cream was misbranded because of false and misleading label representations that it was an antiseptic and would be efficacious in treating cuts, boils, felonies, sores, ulcers, itching, and all forms of rashes, eczema, skin disorders in general and bites of animals and also when used on the neck in cases of sore throat, croup and enlarged glands. Both products further misbranded in that labels failed to give common or usual names of active ingredients, or an accurate statement of the quantity of contents—[D. D. N. J., F. D. C. 687, February 1943].

Todd's Capsules—J. E. Todd, Inc., Kenmore, N. Y. Shipped August 16 and Nov. 21, 1941. Composition in each capsule magnesium oxide (approximately 0.16 grain), calcium carbonate (about 2 grains), sodium bicarbonate (from 2.1 to 3.8 grains), a gum resin such as olibanum, small amounts of an iron compound and sulfur, and sand varying from 2.5 to 4.3 grains per capsule. Misbranded because label falsely and misleadingly represented that the product would relieve conditions of excess acidity and in that way gradually alleviate aches and pains that may be symptoms of, or associated with, "rheumatic conditions"—[D. D. N. J., F. D. C. 690, February 1943].

Tu-Way Massagers—E. W. Arnold Company, Logansport, Ind. Shipped Aug. 21, 1941. A massaging device which "consisted of a series of rubber covered disks, attached to a handle, which were to be rolled over portions of the body." Misbranded because of false and misleading representations in accompanying circular that it was founded on an exact scientific principle and would positively remove the fat spots, beautify the figure and break down fatty deposits so that they would be oxidized within the body, with the result that the residue would be carried away by the blood stream and disappear through the organs of elimination leaving the flesh firmer and more solid, that it would be wonderfully soothing and strengthening to tired, aching neck and shoulders, that it would be effective in correcting fleshy, corpulent and pendulous abdomens, and stimulate activity of the liver—[D. D. N. J., F. D. C. 692, February 1943].

Ultrazol—Post Institute Sales Corporation, Newburgh, N. Y. Shipped Sept. 30, 1941. Composition Ultrazol Fluid, essentially light mineral oil, oxyquinoline (0.12 Gm. per 100 cubic centimeters), organic substances including cholesterol, and perfume, Ultrazol Hair Bath, essentially a wetting agent, such as sodium lauryl sulfate, a small amount of cholesterol and other organic material. Ultrazol Fluid misbranded because of false and misleading representations on cartons and labels and in accompanying leaflets that this combination would promote luxuriant hair and scalp hygiene, remove dandruff, help check excessive hair loss, and combat premature graying, that it would bring about a condition under which the natural hair growing process would be unimpeded and natural hair growth would become possible, that it would remove obstruction to the development of fuzz or thim, short hair, stop abnormal hair loss and make dull, dry, faded hair become brilliant, that new hair would be produced on gray heads, which frequently would be of the original shade, thus indicating that it would prevent graying, that it would strengthen the hair for lasting, artistic permanent waving, give dyed hair an even, "refined" luster, and normalize dry or oily scalp—[D. D. N. J., F. D. C. 693, February 1943].

Correspondence

"MILK BORNE IMMUNITY"

To the Editor:—The editorial entitled "Milk Borne Immunity" which appeared in the February 19 issue of THE JOURNAL calls attention to the work of Berry and Slavin on the transfer to young mice of specific antibodies contained in the breast milk of herpes virus immune mothers and concludes that the "extension of the theory of milk borne immunity to include certain virus diseases has important clinical applications." Evidence for the existence of milk borne immunity in rabbit pox, a virus disease of rabbits, was presented in earlier reports which escaped the attention of both your editorialist and of the investigators cited.

Three epidemics of rabbit pox occurred in a large breeding colony between the spring of 1930 and the winter of 1933. The first and third epidemics were relatively mild, but the second epidemic occurred with explosive violence in a highly malignant form. Investigation through clinical, pathologic, immunologic and host-range experiments identified the etiologic agent as a filtrable virus, qualitatively related to vaccine virus but more virulent. "None of the nursing young of four mothers immune to the causative agent of the second epidemic contracted the disease during the third epidemic. On the other hand, the infection was noted in all of the young of a susceptible doe, and also in every member of a litter of nursing age which had been weaned prematurely by their immune mother because of the mother's physical deterioration. This evidence indicates that nursing a specifically immune mother probably protects young animals from developing the lesions of a spontaneous and epidemic disease, rabbit pox. . . . the protective influence derived from nursing an immune mother, unlike the specific immunity acquired by recovery from actual infection, was of comparatively short duration" (Rosahn, P. D., and Hu, C. K.: Rabbit Pox: Report of an Epidemic, *J. Exper. Med.* 62:331 [Sept.] 1935). The loss of immunity noted in rabbit pox parallels the later findings of Berry and Slavin with regard to herpes infection of mice.

Following the potential exposure of our breeding stock to a case of rabbit pox, 1,185 young animals were vaccinated with vaccine virus as a prophylactic measure. "Under the wholly dependent conditions of nursing there was a striking tendency toward the maintenance of a refractory state. It was found that an immune mother conveyed to the litter some measure of protection against the manifestations of vaccinia. The effect of this passive immunity was shown not only with regard to the character of the local reaction but also in the lower incidence and delayed time of development of generalized manifestations" (Pearce, Louise; Hu, C. K., and Rosahn, P. D.: The Reaction of the Nursing Rabbit to Vaccination with Vaccine Virus, *J. Immunol.* 31:73 [Aug.] 1936). Coincident with the observations on these vaccinated young, observations were conducted also on the unvaccinated members, chiefly nurslings, of the breeding colony. Here again the conclusion was reached that "an immune nursing doe conveyed to the litter some protection against the effects of vaccinia" (Pearce, Louise; Rosahn, P. D., and Hu, C. K.: Epidemiological Aspects of Spontaneously Acquired Vaccinia in the Rabbit, *J. Path. & Bact.* 43:299 [Sept.] 1936).

The reports cited indicate that a milk borne immunity occurs in rabbits exposed to pox and vaccinia, virus diseases which are qualitatively related. This evidence, together with the subsequent findings of Berry and Slavin with respect to herpes infection of mice, suggests that milk borne immunity is a biologic phenomenon not limited to a particular virus or species.

PAUL D. ROSAHN, M.D., New Britain, Conn.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, March 18, page 795.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part I-II. Various centers, May 1-3. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written. Various large cities, May 8. Oral. Chicago, June 9-10. Final date for filing application is April 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written. Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY. Oral. Part II. Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 2-5. Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Oral and Written. Part I. Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: Oral. New York City, June 1-4. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: Oral and Written. Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Written. Locally, Sept. 22. Oral. St. Louis, Nov. 8 or 9. Final date for filing application is July 8. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Societies: Right of Individual Member to Restrain Society from Admitting an Applicant Irregularly.

—Walker, a member in good standing of the Medical Society of Mobile County, Ala., a "voluntary nonprofit" corporation, filed a bill to restrain the society and its secretary, Scales, from recognizing or seating Webb and Greene as members of the society until they had been duly elected as members in the manner provided in the society's constitution. The society's constitution, the bill alleged, provided that three adverse votes should reject any applicant for membership and that when the applications of both Webb and Greene were considered by the society membership more than three adverse votes were cast against their admittance but that nevertheless the secretary of the society had enrolled Webb and Greene as members of the society or that he intended so to do, and that the society intended to recognize them as members. The society and Scales demurred to the bill, and when the demurrers were overruled they appealed to the Supreme Court of Alabama.

Membership in a voluntary association, said the Supreme Court, is a privilege which may be accorded or withheld by the association, and not a right which can be gained independently and then enforced. The courts cannot compel the admission of an individual into such an association, and if his application is refused he is entirely without legal remedy, no matter how arbitrary or unjust be his exclusion. Medical societies have the right to make their own rules on the subject of admission or exclusion of members, and these rules are considered as articles of agreement, to which all who are members become parties. 4 Amer. Jur. 462, *Chapman v.*

American Legion, 14 So. (2d) 225, 147 A. L. R. 585 and Note. They may make their own constitution and by-laws; and, so long as they remain unchanged, each member is alike bound and shielded by them. The society too must observe its own constitution and by-laws until it changes them in legal form. Of course, such constitution and by-laws, to be obligatory, must not contravene public law nor any principle of public policy. *Weatherly v. Medical & Surgical Society of Montgomery County*, 76 Ala. 567. We know of no case, continued the court, in which injunctive relief has been sought to prevent a medical society from violating the express provisions of its own constitution in respect to the selection of its members. But that such relief is available is clearly indicated in the *Weatherly* case, *supra*, where the court said:

The society, too, must observe its own constitution and laws, until it changes them in legal form.

Mandamus is a proper remedy to correct the wrong of illegal expulsion from the society, illegal because done in violation of the constitution, by-laws, rules and regulations of the society. We can see no reason for withholding injunctive relief against the anticipated violation of the constitution in the present case. In the one case the illegal act has been accomplished and mandamus is the proper remedy to undo the wrong. In the other, the illegal act is only threatened and mandamus will not lie.

Ordinarily, said the court, a court of equity will not interfere with the internal affairs of a voluntary association or assume jurisdiction to restrain its acts done or attempted in accordance with its rules and within the scope of its powers. On the other hand, if the act complained of is unauthorized or unlawful and occasions irreparable injury to the complainant member for which there is no adequate and complete remedy at law, equitable relief by way of injunction will be granted. Here it is earnestly insisted that irreparable injury to the complainant, Walker, is not shown. It is perfectly clear, the court answered,

that the threatened acts of the society and its secretary are unauthorized, unlawful and in direct violation of the society's constitution. As previously pointed out, this court has ruled to the effect that Walker's membership in the medical society here involved is a property right of value; that the constitution of the society is a contract between its members and one that the society itself must observe until changed in legal form. A court of equity will endeavor to the extent of its powers to bind men's consciences so far as they can be bound to a true and literal performance of their agreements and will not suffer them to depart from their contracts at pleasure, leaving the party with whom they have contracted to the mere chance of any damage that a jury may assess. The matter is discretionary with the courts, and the courts regard it as unwise, even if it were possible, to promulgate or declare unchangeable rules to govern all cases. The matter must depend to a large extent on the facts and circumstances of each case. As ordinarily understood, an injury is irreparable, within the law of injunctions, where it is of such a character that a fair and reasonable redress may not be had in a court of law, so that to refuse the injunction would be a denial of justice. In respect to its membership, the proposed procedure on the part of the society and its secretary amounts to a complete destruction of the constitution of the society and opens the door to the destruction of Walker's, or any other member's, every right in it. In our opinion there is no adequate remedy at law, and under the allegations of the bill filed by Walker injunctive relief should be granted.

It was next insisted that Walker must first exhaust all remedies provided in the society before he could appeal to the courts for relief. The action complained of, the court answered, shows a threatened violation of the constitution of the society, in consequence of which there can be no redress except by resort to legal remedies. Where the threatened procedure is irregular and without jurisdiction, the member aggrieved thereby may seek judicial redress by a direct appeal to the courts in the first instance. 7 Corpus Juris Secundum, pages 81, 82.

However, because neither Drs. Webb nor Greene, the applicants who it is alleged were about to be illegally admitted to

the society, were made parties to the action, the majority of the court held that the demurrers interposed by the society and its secretary should have been sustained, since "the court [should] not interfere in a case involving in a collateral manner the right of parties who have no opportunity of defending their interest." The judgment of the lower court overruling the demurrers was accordingly reversed and the cause was remanded. *Medical Society of Mobile County v. Walker*, 16 So. (2d) 321 (Ala., 1944).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for Thoracic Surgery, Chicago, May 5-6. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.
- American Psychiatric Association, Philadelphia, May 15-18. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
- Arizona State Medical Association, Phoenix, April 14-15. Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
- Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 9. Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Connecticut State Medical Society, Bridgeport, May 2-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Florida Medical Association, St. Petersburg, April 13-14. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia, Medical Association of, Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, April 20-21. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
- Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society, New Orleans, April 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Minnesota State Medical Association, Rochester, April 13-15. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
- Mississippi State Medical Association, Jackson, May 9-10. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, April 23-25. Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis, Executive Secretary.
- National Tuberculosis Association, Chicago, May 10-12. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 16. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25-27. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, May 1-3. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Fargo, May 7-9. Dr. L. W. Larson, 221 5th Street, Bismarck, Secretary.
- Northern Tri-State Medical Association, Toledo, Ohio, April 11. Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
- Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24-26. Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
- West Virginia Medical Association, Wheeling, May 15-16. Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia 207:1-140 (Jan.) 1944

- Nature of Graves' Disease, with Special Reference to Its Ophthalmic Component J. H. Means—p. 1
- *Treatment of Addison's Disease with Pellets of Desoxycorticosterone Acetate R. A. Shipley—p. 19
- Use of Fibrinogen in Rapid Method of Determining Cell Volume S. Gray—p. 29
- *Inhalatory Route for Prophylaxis and Treatment of Experimental Influenza: I. Distribution of Inhaled Material A. P. Krueger and others—p. 40
- Yeast-like Fungi in Intestinal Tract of Chronically Institutionalized Patients. O. Felsenfeld—p. 60.
- Treatment of 134 Cases of Meningococcal Infection with Massive Doses of Sulfadiazine B. A. Marangoni and V. C. D'Agati—p. 67.
- Idiopathic Hypoproteinemia F. D. Murphy and J. K. Clark—p. 77.

Pellets of Desoxycorticosterone Acetate in Addison's Disease.—Shipley reports observations on 7 patients with Addison's disease treated with pellets of desoxycorticosterone acetate. The pellets were inserted in the infrascapular region through an incision about 1 cm. long. Pockets radiating in various directions were made with a hemostat beneath the skin in the subcutaneous tissue. As many as 6 pellets could easily be inserted through one incision. There were no infections and in no cases were pellets spontaneously extruded. When the old pellets had been in place long enough to undergo considerable absorption, they were removed and weighed, and new pellets were inserted. Five of the 7 patients with Addison's disease were maintained well by this method for seven to forty months and were able to carry on work involving moderate physical activity. The other 2 patients were not satisfactorily controlled either by the pellets or by the compound administered by injection. Both of these patients died from disease. One patient died suddenly after an attack of appendicitis at a time when he seemed to be convalescing satisfactorily. Patients under therapy with pellets of desoxycorticosterone acetate may easily become hypoglycemic by fasting. They are particularly vulnerable in the presence of an infection. Pellet therapy with desoxycorticosterone acetate is highly useful for the maintenance of most patients with Addison's disease. During infections or other conditions imposing stress the requirement for hormone is increased and under these circumstances additional therapy, chiefly in the form of cortical extract, should be given. The effective life of the 75 mg. pellet, which is being used at the present, is approximately nine to ten months, the average daily absorption is 0.21 mg. per pellet, and the average number of pellets required is four to six. The rate of absorption is reasonably constant. It has been possible to implant pellets without subjecting patients to a lengthy preliminary period of therapy with injections.

Inhalatory Route for Prophylaxis and Treatment of Influenza.—The work of Smorodintsev and other Russian investigators on the prevention and treatment of human influenza by inhalation of immune horse serum stimulated Krueger and his associates to investigate this possibility. They describe an atomizer capable of producing a fine particle mist, preparation of horse immune plasma and its globulin fraction and its employment in experiments on mice. Immunization was also attempted with a neutral mixture of serum and active virus. High titer horse immune serum, or its globulin fraction administered by intranasal inoculation or by inhalation protected mice against subsequent intranasal infection with influenza virus. The degree of protection conferred increased with the time of exposure to the globulin spray. Whole immune plasma was superior to any individual globulin fraction in the degree and

duration of its protective power for mice. Treatment of mice with horse immune serum intranasally, or globulin by inhalation, was effective in reducing the lung lesions. Early treatment is important. The value of repeated treatments in lessening the severity of the experimental disease was definitely established, the lung lesions decreasing as the number of treatments is increased. Neutral mixtures of immune serum and active virus were ineffective in producing an active immunity in mice. Mice subjected to repeated intranasal inoculations of a virus treated with formaldehyde showed a considerable degree of immunity when tested ten days after the last inoculation. Immunity failed to develop in mice receiving concurrent intranasal serum treatments along with the formaldehyde treated virus.

American Journal of Physiology, Baltimore

140:287-460 (Dec.) 1943 Partial Index

- Effect of Saline Washings of Isolated Jejunal Loops on Gastric Secretion. W. DeW. Andrus, J. W. Lord Jr., P. Stefko and J. A. Dingwall, III—p. 287
- Studies on Effect of Anoxic Anoxia on Central Nervous System M. Kessler, H. Hailman and E. Gellhorn—p. 291
- Effects of Polycythemia and of a Carrot Diet on Resistance to Anoxia P. Wetzig and F. E. D'Amour—p. 304
- Water and Fat Content of Orbital Tissues of Guinea Pigs with Experimental Exophthalmos Produced by Extracts of Anterior Pituitary Gland. G. K. Smelser—p. 308
- Absence of Phosphate Transfer in Oxidative Muscular Contraction. J. Sacks—p. 316
- Persistence of Heat Acclimatization in Man A. Henschel, H. L. Taylor and A. Keys—p. 321
- Some Effects of Pectin Solutions During Posthemorrhagic Hypotension S. Middleton and C. J. Wiggers—p. 326
- Renal Excretion of Chloride by Normal and by Diabetes Insipidus Dog. Ruth S. Hare, K. Hare and D. M. Phillips—p. 334
- Increased Red Blood Cell Fragility After Fat Ingestion J. Longini and V. Johnson—p. 349.
- Effect of Oxygen Deprivation on Relation Between Stimulus Intensity and Latency of Visual After Images R. A. McFarland, L. M. Hurvich and M. H. Halperin—p. 354
- Effect of Cyanide and Other Metal Binding Substances on Pharmacologic Action of Epinephrine J. S. Friedenwald and W. Buschke—p. 367
- Effects of Low Barometric Pressures on Kidney Function in White Rat H. Silvette—p. 374.
- Validity of "Ovulation Potentials" J. M. Snodgrass, J. Rock and Miriam F. Menkin—p. 394.
- Role of Kidneys in Resistance of Rats to Hemorrhage. H. T. Bahnson—p. 416
- Measurement of Bleeding Volume in Dog for Studies on Blood Substitutes H. Lawson—p. 420
- Relative Value of Various Fluids in Replacement of Blood Lost by Hemorrhage, with Special Reference to Value of Gelatin Solutions H. Lawson and W. S. Rehm—p. 431
- *Effect of Sodium Chloride Intake on Work Performance of Man During Exposure to Dry Heat and Experimental Heat Exhaustion H. L. Taylor, A. Henschel, O. Mickelsen and A. Keys—p. 439
- Effects of Purified Anterior Pituitary Hormones on Carbohydrate Stores of Hypophysectomized Rats. V. V. Herring and H. M. Evans—p. 452

Sodium Chloride Intake and Work During Dry Heat.

—Taylor and his associates deal with the effects of work in heat on cardiovascular and related functions. The effects of three levels of sodium chloride intake on cardiovascular functions were studied in 49 "normal" men at work and at rest during exposure to hot dry conditions. Men maintained on 6 Gm. of sodium chloride daily (low intake) had higher pulse rates and rectal temperatures than men receiving 15 Gm. daily (moderate intake). The deleterious effect of the low salt intake was also reflected in poorer postural cardiovascular adjustment. The men on the low salt intake lost more than twice as much body weight, drank less water and sweated less than the men on the moderate salt intake. The low salt intake resulted in an average net deficit of 13 Gm. of sodium chloride for three days in the heat. The men on the moderate salt intake appeared to be in sodium chloride balance after three days in the heat. Heat exhaustion and prostration, characterized by nausea, vomiting, tachycardia, hypotension, vertigo, dehydration and collapse, occurred in 25 per cent of the men on the low salt intake and in only 2.5 per cent of the men on the moderate salt intake. Although pronounced hypochloremia was observed in many instances, heat cramps did not occur. There was little or no relation between the concentration of chloride in the sweat and the rectal temperature. It is concluded that heat exhaustion and ability to work in the heat are almost wholly dependent on cardiovascular function and that a moderate salt intake is more important to preserve this function than to prevent heat cramps. Hypochloremia is not the only factor in heat cramps. The

sodium chloride requirement of unacclimatized men who are sweating 5 to 8 liters a day is not greater than 13 to 17 Gm. daily. An increase in salt intake above this level results in increased loss of salt and water in the urine with no apparent advantage.

Archives of Dermatology and Syphilology, Chicago 49:1-90 (Jan.) 1944

- Studies on Ointments: VI. Ointments Containing Chrysarobin E. A. Strakosch—p. 1.
Id.: VII. Zinc Oxide Pastes. E. A. Strakosch—p. 8.
Calcification and Ossification of Steatomas of Scrotum: Report of Case F. Ronchese—p. 12.
Rational Pharmaceutical Treatment of Diseases of Skin H. Goodman—p. 16.
Dermatologic Significance of Tissue Eosinophilia R. J. Burkhart and H. Montgomery—p. 19.
Sulfonamide Compounds in Treatment of Erysipelothrix Rhusiopathiae Infections: Effectiveness of Sulfanilamide, Sulfapyridine, Sulfathiazole and Sulfadiazine Against Experimental Infection in Mouse and Against Erysipeloid of Rosenbach in Man J. V. Klauder and Anna M. Rule—p. 27.
Nutritional Dermatoses in Rat: X. Comparison of Disseminated Neurodermatitis and Experimental Magnesium Deficiency. M. Sullivan and Virginia J. Evans—p. 33.
Aloe Vera Plant. H. C. Goldberg—p. 46.
Severe Erythema Multiforme: Report of 2 Cases of Type Ectodermosis Erosiva Plurifascicularis, with Development of Cicatricial Conjunctivitis and Keratitis in 1 Case. W. F. Lever—p. 47.
Relationship of Balanitis Xerotica Obliterans to Lichen Sclerosus et Atrophicus C. W. Layman and C. Freeman—p. 57.

Iowa State Medical Society Journal, Des Moines 34:1-44 (Jan.) 1944

- Modern Treatment of Traumatic Shock E. I. McGowan—p. 1.
Distribution of Pooled Normal Human Serum and Plasma in Iowa. C. F. Jordan—p. 8.
Staphylococci Septicemia, Tonsillar in Origin J. E. Rock—p. 10.
Shockless Surgery with Refrigeration Anesthesia I. C. Hallendorf and E. B. Winnett—p. 13.
Benign Gastric Tumor. D. F. Ward—p. 16.
Rationalization of Practice of Medicine W. L. Biering—p. 25.

Journal of Bone and Joint Surgery, Boston 26:1-228 (Jan.) 1944. Partial Index

- Observations on Function of Shoulder Joint V. T. Inman, J. B. deC. M. Saunders and L. C. Abbott—p. 1.
Lesions of Musculotendinous Cuff of Shoulders: I. Exposure and Treatment of Tears with Retraction H. L. McLaughlin—p. 31.
Blade Plate Internal Fixation for Intertrochanteric Fractures A. T. Moore—p. 52.
Sulfonamides in Treatment of Chronic Osteomyelitis J. A. Key—p. 63.
Capsulectomy for Relief of Flexion Contractures of Elbow Following Fracture. P. D. Wilson—p. 71.
Kenny Concepts and Treatment of Infantile Paralysis A. B. Gill—p. 87.
Experiences with Kenny Treatment for Acute Poliomyelitis in Epidemic of 1942, Monmouth and Ocean Counties, New Jersey. N. S. Ransohoff—p. 99.
Analysis of Neuromuscular Disorders in Poliomyelitis J. Moldaver—p. 103.
Metal-Block Replacement of Bone Deficiency: Preliminary Report of an Operative Correction for Genu Recurvatum R. Sutherland and M. J. Rowe Jr.—p. 118.
Chip Fusion of Low Back Following Exploration of Spinal Canal. H. Briggs and P. R. Milligan—p. 125.
Carpectomy for Intractable Flexion Deformities of Wrist J. W. White and S. G. Stubbs—p. 131.
Compression Fractures of Vertebral Bodies and Other Changes Mistaken for Tumor. J. D. Ellis—p. 139.
March Fractures. B. L. Clement—p. 148.
Delayed Reduction of Fractures. J. R. Moore—p. 151.
Brachialgia: Manifestation of Various Lesions I. W. Nachlas—p. 177.
Sympathetic Block in Treatment of Local Shock. Experimental Study. J. E. M. Thomson, F. Helwig and E. Sire—p. 189.
Shock in Extremity Surgery. D. B. Phenister—p. 197.

Sulfonamides in Chronic Osteomyelitis.—In 1941 Dickson, Diveley and Kiene reported a series of 22 cases of chronic osteomyelitis in which the infected soft tissue and bone had been carefully excised, the wound dusted with sulfathiazole powder and closed in layers, and the extremity immobilized in a plaster cast. The patients were given sulfathiazole by mouth for five days before the operation and for about fifteen days after the operation. Healing by primary intention occurred in 82 per cent of the patients. Key used this method in operating on 101 consecutive patients with chronic pyogenic infection of bone. Including 11 amputations, 60 of the wounds healed by primary intention, but sinuses later developed in 4. The percentage of primary healing in this series was less than that obtained by Dickson, Diveley and Kiene. However, their series

apparently represented a selected group of cases in which it was possible to perform a satisfactory excision of the focus and close the wound. The author's series represented every case of chronic bone infection in which he had operated in the past two and one-half years. Key believes that the method is superior to Orr's method. The closed method with chemotherapy is not dangerous and enables the surgeon to swing flaps, cover bones and eliminate large areas of scarring in a manner which is not possible by any other method.

Neuromuscular Disorders in Poliomyelitis.—Moldaver carried out a series of investigations to test the Kenny concept of poliomyelitis. Neuromuscular degeneration, such as would be caused by lesions of the anterior horn cells, was explored by the chronaxia method; the so-called spasm was studied in some patients, mostly by electromyograms. Fifty-one patients were tested. The time elapsed between the onset of the disease and the tests varied from ten days to one year. Muscles called "alienated" as well as muscles in "spasm" were explored, muscles considered to be normal clinically also were tested. It was always found that the more advanced the degeneration, the less extensive was the "spasm." The author emphasizes that "spasm" is not the most damaging symptom of the disease, it is a complex and ill defined phenomenon under which several different conditions are included. "Spasm" does not lead to neuromuscular degeneration. In paralytic and paretic muscles called "alienated" there was always some degree of neuromuscular degeneration. Among these muscles some were partially denervated; these have a good chance to recover. Some others were totally denervated and therefore will not recover. There is no clinical evidence of "incoordination" in the ordinary sense. The patient attempts voluntarily or involuntarily to use a stronger muscle for a weak or paralyzed one. This abnormal use of an extremity is substitution and not "incoordination."

Journal of Experimental Medicine, New York 79:1-128 (Jan.) 1944. Partial Index

- Biochemical Studies on Shock Jane A. Russell, C. A. H. Long and T. L. Engel—p. 1.
Fatal Murine Typhus in the dba Strain of Mice, with Observations on Strain Variation in Susceptibility V. Moragues and H. Pinkerton—p. 35.
Relationship of Virus of Louping Ill in Sheep and Virus of Russian Spring Summer Encephalitis in Man J. Casals and L. T. Webster—p. 45.
Further Laboratory Studies on Classification of Psittacosis like Agents M. Dorthy Beck, M. D. Eaton and Rosemary O'Donnell—p. 65.
Studies on Antigenic Composition of Group A Hemolytic Streptococci Rebecca C. Lancefield and W. A. Stewart—p. 79.
Serologic Diagnosis of Relapsing Fever. G. J. Stein—p. 115.

Journal of Infectious Diseases, Chicago 73:173-256 (Nov.-Dec.) 1943

- Fate of Virus of Lymphogranuloma Venereum in Infected Mice Receiving Sulfonamide Therapy E. C. Rodaniche—p. 173.
Survival of Bacteria on Silver Communion Cup W. Burrows and Elizabeth S. Hemmens—p. 180.
Further Evidence of Virus Character of Cytoplasmic Inclusion Bodies Reported in Throat and Other Epithelial Tissues J. Broadhurst, Estelle Maclean and Inez Taylor—p. 191.
Increased Incidence of Cytoplasmic Virus Bodies in Human Throats in New York City Area Jean Broadhurst, Estelle Maclean and Inez Taylor—p. 195.
Survival of Lansing Strain of Poliomyelitis Virus in Common House Fly, Musca Domestica L. R. C. Rendtorff and T. Francis Jr.—p. 198.
Efforts Toward Selective Extraction of Poliomyelitis Virus E. Herrarte and T. Francis Jr.—p. 206.
Biochemical Studies on Phenomenon of Virus Reproduction I. Amino Acids and Multiplication of Bacteriophage J. Spizizen—p. 212.
Id.: II Studies on Influence of Compounds of Metabolic Significance on Multiplication of Bacteriophage J. Spizizen—p. 222.
Further Studies on Coliform Bacteria Serologically Related to Genus Salmonella P. R. Edwards, W. B. Cherry and D. W. Bruner—p. 229.
Persistence of Antibodies to Streptococcal Infection in Adolescents: Epidemiologic Study in a Boys' School. Rebecca Z. Solomon—p. 239.
Effect of Heat on Toxic and Antigenic Properties of Meningococcus C. P. Miller, R. M. Becker, Doretta Schad and Mary Wright Robbins—p. 248.

Survival of Bacteria on Communion Cup.—The opinion appears to be generally held that the use of the silver chalice as a common communion cup is highly undesirable from the hygienic point of view. Burrows and Hemmens present evidence which indicates that bacteria swabbed on the polished surface of the silver chalice die off rapidly. Experiments on the transmission of test organisms from one person to another

by common use of the chalice showed that approximately 0.001 per cent of the organisms are transferred even under the most favorable conditions, when conditions approximated those of actual use, no transmission could be detected. Only small numbers of bacteria from the normal mouth could be recovered from the chalice immediately after its use by 4 persons. It is concluded that the silver communion cup is not an important vector of infectious disease.

Journal of International College of Surgeons, Chicago 6:517-604 (Nov-Dec) 1943

- Evaluation of Vaginal Hysterectomy W. I. Reich and M. J. Nychtew—p. 517
• Attempts to Influence Spondylarthritis Ankylopoietica by Means of Implantations of Toxic Goiter F. Mandl—p. 529
Treatment of Fracture of Skull in Children T. Graña—p. 537
Use of Living Fascia in Repair of Hernias M. Behrend—p. 546
Fractional Dosage in Spinal Anesthesia J. Delorme—p. 554
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Cholecystoduodenostomy for Hepatomegaly with Jaundice C. I. Nagel—p. 572
Malformations of Gallbladder E. B. Ribeiro—p. 575
Method of Vaginal Hysterectomy to Conserve Blood in Incision of Uterus H. A. Springer—p. 579

Implantations of Toxic Goiter in Spondylarthritis Ankylopoietica.—According to Mandl, spondylarthritis ankylopoietica is found chiefly in males. It is characterized by rapidly spreading ossification of the small ligaments of the spinal column to the areas above and below those first attacked. At a later stage the hip joint becomes involved, and there is a union between the fifth lumbar vertebra and the sacroiliac joint. The spine becomes increasingly stiff, and there is local as well as radiating pain. It may be difficult to differentiate between spondylarthritis ankylopoietica and certain types of atrophic or hypertrophic spondylarthritis. Various treatments have been tried. The antirheumatics and exercise treatment give little relief. Roentgen treatment may lessen pain, but the author doubts that it accomplishes remissions. The endocrine approach led to parathyroidectomy to lower the calcium level of the blood. Apart from the fact that increased blood calcium is only rarely encountered in spondylarthritis ankylopoietica, a number of authors who tried it eventually abandoned the method since it produced no satisfactory results. According to Crotti implantations of thyroid gland have been tried repeatedly. Mandl used implants of thyrotoxic goiter for 4 patients with spondylarthritis ankylopoietica. The tissue was taken from patients of the same blood group and was implanted into the posterior rectus sheath of the spondylarthritic patient. Three of the patients had typical spondylarthritis ankylopoietica. In 2 the toxic goiter implants produced considerable improvement while in the third decalcification of the skeleton was noted after eight months. In 2 less severe cases internal endocrine therapy with thyroidin was given, and both improved for the duration of the treatment. This method is merely considered a symptomatic measure. There is no indication of a relationship between spondylarthritis ankylopoietica and thyroid function. The effect probably occurs concurrently with an increased basal metabolic rate.

Journal of Lab. and Clinical Medicine, St. Louis 29:1-120 (Jan) 1944

- Clinical Method for Studying Factor of Human Relations in Disease E. D. Chapple and W. T. Vaughan Jr.—p. 1
Effect of Subcutaneous Injection of Urine and Urinary Extracts from Rheumatoid Patients into Rats H. Waime, W. Bauer and G. A. Bennett—p. 19
Active and Passive Immunity in Experimental Haemophilus Pertussis Infection in Mice J. A. Toomey, A. Lewis, E. Averill, W. Drury and W. S. Takacs—p. 21
Aneurysms of Vertebral Arteries: Consideration of Their Etiology R. H. Rigdon and C. Allen Jr.—p. 28
Resistance of Melbourne Strain of Influenza Virus to Desiccation Ernestine R. Parker, W. B. Dunham and W. J. McNeal—p. 37
Apparent Advantage of Frequently Administered Quinine in Avian Malaria Infections H. Beckman and Jane Smith—p. 43
Study of Effects of Vitamin D on Capillary Permeability by Use of Dye T. 1824 A. Silver, I. E. Steck and C. I. Reed—p. 48
Extreme Resistance to Insulin Stupor in Schizophrenic Patient T. D. Rivers and K. A. C. Elliott—p. 55
Purified Pyrogen from Eberthella Typhosa: Preliminary Report on Its Preparation and Its Chemical and Biologic Characteristics C. Tun, D. Hope, M. H. Schmitt and J. Powers, with technical assistance of A. Wallen and Lilly Schmidt—p. 58

West Virginia Medical Journal, Charleston

40:1-36 (Jan) 1944

- Peripheral Vascular Disease and Industry A. W. Duryee—p. 1
Management of Diabetic Patient During Acute Illness H. Peterson—p. 9
New Cause of Metatarsalgia (Report of Case) H. A. Swart—p. 12
Simmonds' Syndrome (Pituitary Cachexia): Report of Case G. R. Mullins—p. 13

Yale Journal of Biology and Medicine, New Haven 16:105-216 (Dec) 1943

- Place of Vesalius in Culture of Renaissance E. A. Cassirer—p. 109
Vesalius at Paris E. C. Streeter—p. 121
Opportunism and Publication of Fabrica C. P. Rollins—p. 129
Attack of Truncus Arteriosus on Andreas Vesalius and Defense by Gabriel Cuncus A. Castiglioni—p. 135
• Diabetes Mellitus and Pregnancy P. H. Laviates Deborah C. Terry, A. W. Winkler and J. P. Peters—p. 151
• Reactions to Transfusions of Banked Blood: Two Years' Experience of the New Haven Hospital Blood Bank R. I. Carlson—p. 167
Localization of Taste in Thalamus of Marmoset Mulatta M. Blum, A. E. Waller and T. C. Ruch—p. 175
Antifibrinolysin in Test in Normal and Toxicemic Pregnancy D. C. Terry and L. G. Welt—p. 193
Significance of Easily Detachable Iron in Trauma and Other Conditions N. W. Popoff and Anna Popoff—p. 197

Diabetes Mellitus and Pregnancy.—Laviates and his collaborators studied 31 pregnancies in 23 diabetic women delivered in the New Haven Hospital between 1921 and 1943. Eight of the 14 primigravidae were 27 years of age or more, four of the 9 multigravidae were 39 years or older. Hypertrophy of the fetal pancreas and lactation probably have no considerable effect on the tolerance for carbohydrate. Tolerance for carbohydrate falls quite regularly during pregnancy, the most striking fall usually beginning at six to eight months, with return to the original level at or shortly before term. Obvious hydramnios occurred five times. There was no maternal mortality. Glycemia occurred in 10 patients. Of these, 4 with hypertensive toxemia had had severe hypertension before the onset of pregnancy. Five of the 6 patients with preeclamptic toxemia were 28 years or older. Three of the 6, including the young one, had labile hypertension prior to the pregnancy. Of the 8 patients with 2 pregnancies each, 2 had toxemia both times, 6 neither time. The risk of toxemia is slight in young patients without previous vascular disease and in multigravidae without previous hypertension or toxemia. The babies tend to be large. Nine of the 23 mothers lost babies. Twelve of the 31 babies were lost. There was no correlation between fetal mortality and maternal toxemia. The authors feel that diabetes is not an indication for abdominal delivery. Patients who have a past history of repeated fetal accidents must be given a guarded prognosis, and if there are living children pregnancy should be discouraged. Patients with hypertension before pregnancy or with previous toxemia of pregnancy should be considered in the same category, without consideration of the diabetes.

Reactions to Transfusions of Banked Blood.—Carlson analyzes the record of a hospital blood bank. During a two year period 3,388 transfusions of banked blood were given. Reactions occurred in 6 per cent of the transfusions. Of these reactions 11, or 0.32 per cent, of the total number of transfusions given were serious. These included 3 hemolytic reactions, 3 cases of jaundice without other evidence of hemolytic reaction, 2 anaphylactic reactions and 3 cases in which cardiovascular embarrassment was caused by a transfusion. There was 1 death as a result of transfusion. The hemolytic reaction is the most serious of the transfusion reactions. In contrast to the view that intergroup incompatibility is the cause of all hemolytic reactions, other investigators feel that these reactions may be caused by irregular isoagglutinins present in bloods of the same type. Probably the most important isoagglutinin is that directed against the Rh factor. It has been shown that Rh-positive blood administered to a previously sensitized Rh-negative recipient will cause a severe, frequently fatal, hemolytic reaction. The incompatibility of the cells and serums of the donor and recipient is not evident when the conventional cross-matching technic is used. During the period considered in this study, determinations of presence of the Rh factor were not a routine procedure, so it is not known whether this type of incompatibility was responsible for any of the hemolytic reactions encountered.

FOREIGN.

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

2:753-784 (Dec. 18) 1943

- Health of Hospital Nurses. D. M. Court.—p. 753.
Pressure Palsy in Paralyzed Limb. W. Lewin.—p. 756.
Outbreak of Gastroenteritis in Newborn. J. Sakula.—p. 758.
Sulfapyridine Absorption Through Human Pleura. H. E. Vickers.—p. 760.
Health of Factory Worker in Wartime. S. A. Henry.—p. 762.
Subconjunctival Hemorrhage Caused by Aerobatic Flying. A. G. Cross and J. Ball.—p. 766.

2:785-816 (Dec. 25) 1943

- Anxiety Neurosis in Combatants. C. P. Symonds.—p. 785.
*Clinical Study of Outbreak of Influenza B During Winter, 1942-1943. J. M. Stansfeld and C. H. Stuart-Harris.—p. 789.
*Influenza in Britain, 1942-1943. C. H. Stuart-Harris, R. E. Glover and K. C. Mills.—p. 790.
Influenza Virus B Isolated From Fatal Case of Pneumonia. F. Himmelweit.—p. 793.
Bloodless Tonsillectomy Under Local Anesthesia. G. W. Morey.—p. 794.
*Primary Pulmonary Tuberculosis. F. Murray.—p. 796.
Carcinoma of Esophagus. G. H. Steele.—p. 797.

Clinical Study of Influenza B.—Stansfeld and Stuart-Harris compared a group of 24 cases of influenza B which were proved by serologic tests with a group of 12 clinically similar cases occurring in the same outbreak but showing no rise in antibody to either A or B virus (classified as influenza Y) and also with a collected series of 60 cases of influenza A. Little difference was apparent among the three groups. The clinical findings were in general agreement with those of patients admitted to an American army hospital, whose chest roentgenograms, leukocyte counts and differential counts were not diagnostically significant. Influenza A and influenza B appear to be clinically indistinguishable in the individual patient.

Influenza in Britain in 1942 and 1943.—Stuart-Harris and his associates direct attention to the changing character of recent influenza epidemics. As a four year cycle had prevailed in England since 1929, it was anticipated that 1941 might be a peak period; nevertheless the outbreaks that winter were relatively mild. Laboratory studies indicated that much of the sporadic clinical influenza during January 1941 was due to influenza A virus, but ferrets were less readily infected than in earlier outbreaks. During the winter and spring of 1941-42 and 1942-43 a study of influenza has been continued. During the winter of 1942-43 an investigation of acute respiratory infections was carried out in two divisions. In division B the cases were subdivided into febrile and afebrile, but in division A they included all cases of colds, sore throats, pharyngitis, tonsillitis, influenza, bronchitis and pneumonia, whether febrile or not. Early in 1942 examination of convalescent serums by the Hirst technic and transmission of garglings to ferrets and developing eggs failed to reveal evidence that the mild influenza outbreaks then occurring were due to influenza viruses A or B. A mild increase in the incidence of acute respiratory infections early in 1943 was associated with serologic evidence of influenza B virus infection. Later in the season (March to June) small scattered outbreaks of A virus infection were encountered. The Hirst technic is exceedingly valuable in detecting virus B outbreaks, provided the factors causing variation in the inhibition titers of any particular serum are recognized and suitable precautions are taken against false readings. Like Taylor and his associates, the authors have found it useful to instil garglings into ferrets and examine the serum by the Hirst technic for antibody rise. In a proportion of cases in which the convalescent serum of the human patient showed a significant rise against virus B the ferret serum was also positive.

Primary Pulmonary Tuberculosis.—According to Murray, primary tuberculous infection develops in those who previously have not been sensitive to tuberculin, secondary infection in those who are already sensitive to tuberculin. Primary infection may appear in any part of the lung; secondary infection usually starts in the upper third of the lung. The tracheo-

bronchial lymph nodes become infected and enlarged in primary infection, whereas the draining lymph nodes seldom become involved in secondary infection. The caseous area in primary infection usually becomes encapsulated and calcified; in secondary infection caseous areas usually proceed to liquefaction and cavitation. Hematogenous dissemination, not clinically evident at the time, takes place in most cases of primary infection; in secondary infection the lesion tends to spread by infiltration and by the bronchi. The primary focus in the lung may become completely healed in the course of time, biologically as well as anatomically, leaving behind a small scar or a calcified nodule. Though encapsulation and calcification also occur in the neighboring lymph nodes there usually remains some caseous material within the capsule, and here live bacilli may persist indefinitely. Emphasis is laid on the importance of gastric lavage followed by culture or guinea pig inoculation as the most effective method of proving the cause. Except when constantly exposed to heavy dosage or under abnormal conditions, the symptoms are mild and death during the primary infection phase is comparatively rare. The most important procedure in the treatment of primary tuberculosis is to separate the patient from the source of infection and thus to protect him from continuous dosage with bacilli. Rest is the next most important item. Six to eight weeks' rest is likely to give sufficient time for the lesions to become encapsulated. Most patients recover undiagnosed and untreated. Sanatorium care is not advisable on account of the short duration of illness and the danger of continued exogenous infection to the patient. Ten cases of primary pulmonary tuberculosis were diagnosed in the adult wards of the author's hospital during the last year. Three of the patients were under 20 years of age; the other seven were between 20 and 28. With the exception of 2 patients who developed a pleural effusion, the symptoms were mild and of short duration.

Zentralblatt für Chirurgie, Leipzig

69:1141-1180 (July 11) 1942

- *Influence of Weather and Solar Activity on Fatal Pulmonary Embolism. R. and G. Reimann-Hunziker.—p. 1141.
Successful Operation for Cerebral Subcortical Hematoma. L. Jeker.—p. 1154.
New Formulation of "Categorical Imperative" of Fracture Therapy. M. Petitpierre.—p. 1157.
Cure of Traumatic Injuries of Heart: Electrocardiographic Studies in Cardiac Injuries. G. Neff.—p. 1160.
Modification of Nailing of Neck of Femur to Insure Proper Alignment. F. Andina.—p. 1168.
Surgical Procedure in Certain Diaphragmatic Hernias in Which Radical Operation is Contraindicated. A. Jentzer.—p. 1171.

Influence of Weather and Solar Activity on Fatal Pulmonary Embolism.—The Reimann-Hunzikers investigated the influence of weather and of solar activity on the mortality from embolism on the basis of 224 fatal pulmonary embolisms that were subjected to necropsy in Basel. Embolism occurs rarely on days of the passage of cold fronts. However, there is a high incidence of embolism on days with storm fronts and heat thunder storms. During winter there is a high frequency of embolism during occlusions. A foehn increases the mortality from embolism. During winter embolism is rare in the presence of continental air bodies, but in the presence of maritime and polar-maritime air bodies embolisms are frequent. During summer mortality from embolism increases during the passage of tropical maritime, tropical continental and polar maritime air. Change of an air body to maritime air increases the incidence of embolism during winter but not during summer. In winter of embolism is rare in the presence of continental air. Investigating the influence of solar activity, the authors found that on days with a high incidence of embolism the average magnetic disturbance of the ionosphere is greater than on other days. They also observed an indication of a possible relationship in periodicity between mortality from embolism and solar rotation. There was an increase in cases of eclampsia at times of increased mortality from embolism. It was also observed that, at the time of the culmination of foci of activity in the central meridian of the sun, embolisms increased. There was an increase in embolism mortality on the days following the new appearance of sun spots.

Book Notices

Elements of Medical Mycology. By Jacob Hyams Swartz, M.D., Assistant Professor of Dermatology, Harvard Medical School and Postgraduate School, Boston. Introduction by Fred D. Weldman, M.D., Professor of Dermatological Research, University of Pennsylvania, Philadelphia. Cloth. Price, \$4.50. Pp. 179, with 78 illustrations. New York: Grune & Stratton, 1943.

Until a relatively short time ago there was lack of a textbook on mycology in English. This has been relieved by the appearance of several American works, which means at least two things. Physicians want and need to know more about fungi, and there are enough earnest students of mycology to write about it. A large part of the publications that are of interest to the practicing physician have come from dermatologists. This is natural, since many of the clinical mycologic disorders commonly seen affect the skin but, of course, are not confined to it.

This small book on mycology too is written by a dermatologist and treats mostly of cutaneous infections. It emphasizes the ringworm group in keeping with an obvious attempt to give the most help where the average practitioner needs it oftenest. Probably too the author's experience has inclined him toward the division of space to subject matter adopted. The number of original illustrations seems to show this. These are excellently done and well reproduced. There is combined in this little manual a working knowledge of the laboratory aspects of the fungi together with a description of the clinical aspects of the diseases induced. Treatment too is given a fair consideration. A valuable part of the book is a table which summarizes succinctly both mycologic and clinical information about the important pathogenic fungi. There may be a question or two about the systems of taxonomy adopted for classification of the organisms, but the busy doctor will hardly be worried about this aspect. Perhaps a more serious criticism is the scant consideration given to immunology. The work, however, is evidently meant to provide an acquaintanceship with the field of mycology rather than for the advanced student. For this purpose the volume can be of service and may be recommended.

An Introduction to Clinical Perimetry. By H. M. Traquair, M.D., F.R.C.S., Ophthalmic Surgeon, Royal Infirmary, Edinburgh. With a foreword by Norman M. Dott, M.B., Ch.B., F.R.C.S. Fourth edition. Cloth. Price, \$6.50. Pp. 332, with 248 illustrations. London: Henry Kimpton, 1942.

There has been a general revision of Traquair's book, which first appeared in 1927, and eighteen new illustrations have been added. This edition follows the form of the three previous editions in that the first part contains chapters on normal fields, methods of examination and instruments available for field studies. In part II the author gives illustrations of typical fields, anatomy of the visual pathways and illustrative cases with fields demonstrating interruptions at various levels. There are special chapters on diseases of the choroid and retina, glaucoma, optic nerve diseases, the optic chiasm, the suprachiasmatic pathway and functional changes in the fields of vision. In the appendix he presents isopters for white and color in the normal field; the blind spot; anatomic relations of the visual pathway; the optic nerve sheaths; blood supply of the visual nerve path; other uses of the perimeter and a table of tangents for use with the Bjerrum screen. This book has been a guide for students and practitioners of ophthalmology, and the present edition upholds the author's reputation as a teacher of perimetry and ophthalmic neurology.

A Synopsis of Surgical Anatomy. By Alexander Lee McGregor, M.Ch., F.R.C.S., Assistant Surgeon, Johannesburg General Hospital. With a foreword by Sir Harold J. Stiles, K.B.E., F.R.C.S. Fifth edition. Cloth. Price, \$6.50. Pp. 710, with 696 illustrations by Dr. E. A. Thomas. Baltimore: William Wood & Company, 1943.

The reviewer of a treatise on anatomy must obviously confine himself to remarks concerning the manner in which the subject is treated. In this small volume McGregor has made a special effort to correlate the high points of structure, function, surgical diagnosis and surgical technic. In this he has succeeded very well. The numerous diagrammatic line drawings are so well chosen that without the aid of the text they convey to the reader much of the information set forth in the book. The first half of the treatise is concerned with the anatomy of the normal, the last half with anatomy of the abnormal. The latter division

includes congenital malformations, fistulas, diverticula and the anatomy of nerve injuries. Deserving of special commendation are the chapters on the anatomic bases of clinical tests, the anatomy of certain diseases (infections of the hand, dislocations, rare hernias) and the anatomy of surgical procedures. The author naturally presupposes a knowledge of descriptive anatomy on the part of the reader. The volume therefore does not serve as a textbook or a summary of the subject. On the other hand it is recommended for students in surgery and for interns and residents to peruse in connection with their daily work. To the surgeon it is highly recommended as a small reference volume for constant review in order to keep clarified the salient features of surgical anatomy.

The Anatomy of the Female Pelvis Including a Description of the Placenta and Its Formation and the Fetal Circulation. By C. F. V. Smout, M.B., Ch.B., M.R.C.S., Senior Lecturer and Acting Professor, Department of Anatomy, Sub-Dean and Tutor, Faculty of Medicine, University of Birmingham. With sections, in part I, on The Histology of the Female Reproductive Tract and a chapter on Ovarian Endocrine Function by F. Jacoby, M.D., Ph.D. Foreword by Sir Beckwith Whitehouse, Ch.M., M.S., F.R.C.S., Professor of Midwifery and Diseases of Women, University of Birmingham. Cloth. Price, \$8. Pp. 190, with 170 illustrations. Baltimore: William Wood & Company, 1943.

This monograph includes many colored illustrations. In general they are quite clear but the black and white ones are not. The author has included a chapter on endocrine function, a chapter on the placenta and one on fetal circulation. There are also chapters on embryology and histology. The latter two might properly be included in a monograph on anatomy of the female pelvis, but the other chapters have no place. Furthermore, in the chapter on the placenta the excellent studies of Grosser and Spanner have been omitted. The reviewer feels that the chapter dealing with the pelvic floor is the best.

Nutrition of the Dog. By Clive M. McCay, Professor of Nutrition, School of Nutrition, Cornell University, New York. Cloth. Price, \$1.50. Pp. 140, with 14 illustrations. Ithaca, New York: Comstock Publishing Company, Inc., 1943.

This small volume, by a professor of nutrition who is also a dog lover, does just what it set out to do. It is addressed to the intelligent layman wishing authoritative information about his pet's nutrition, and technical language is correspondingly minimized and explained. It is addressed to scientists not specializing in this field who have occasion to work with dogs, and key references to the newest as well as the older classic papers are included with each chapter. Perhaps, most of all, it is addressed to those concerned with dogs in their business—breeders, handlers and food manufacturers, and for them it provides an excellent guide on nutritional matters. Throughout the text, and explicitly in the first chapter, the author marshals evidence against the antivivisectionists and points out how experiments on dogs have benefited both dog and man. After a general introduction a chapter each is devoted to the dietary requirements of the dog for carbohydrates, fats, proteins, minerals and vitamins. Then follows a section on dog foods, with chapters on the modern commercial feeds, on their ingredients, on testing them and, finally, on practical feeding. The volume should contribute much to canine welfare, even though, as the author dammingly states, "The dogs of this country are, as a whole, probably better fed than the children."

A History of Tufts College Medical School Prepared for Its Semi-Centennial 1893-1943. By Benjamin Spector, M.D., Professor of Anatomy, Tufts College Medical School, Boston. Cloth. Pp. 414, with 142 illustrations. Boston: Tufts College Medical Alumni Association, 1943.

The book describes and documents in chronologic sequence some of the events that occurred at Tufts College Medical School from 1893 to 1943. During these years momentous changes in medical education occurred. The book makes no attempt to trace these changes or to define the position of Tufts College Medical School in these revolutionary developments. Parochial in its outlook, this volume may be of some interest to Tufts faculty, students and alumni but probably not to others.

La glomerulonefritis en la infancia. Por el Dr. Arturo Baeza Goñi. (Prólogo del Prof. Dr. Carlos Lobo O'Neil.) Paper. Pp. 316, with 28 illustrations. Santiago, Chile: Empresa editora Zig-Zag, S. A., 1942.

This comprehensive monograph on glomerulonephritis in childhood is entirely clinical, every one of the author's contentions being supported by clinical histories.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EXAMINATION OF BLOOD AND URINE DURING SULFONAMIDE THERAPY

To the Editor:—At a recent medical society meeting the question was brought up regarding the responsibility of a physician who gives sulfonamides in the home for making periodic checks of the blood and the urine. An opinion on this matter would be appreciated.

A. E. Meinert, M.D., Winona, Minn.

ANSWER.—Whether or not a physician should make periodic examinations of the blood and urine in patients receiving sulfonamides at home is dependent on several factors. The more serious hematologic complications arising from sulfonamide therapy include acute hemolytic anemia and agranulocytosis, while the outstanding urinary abnormality is the suppression of the flow of urine. Fortunately, the foregoing hematologic complications have been rarely encountered. An acute hemolytic crisis is most generally associated with the administration of sulfanilamide, usually occurring after the drug has been ingested for several days. Acute hemolytic anemia may be suggested by the sudden appearance of icteric scleras and pallor of the mucous membranes. Agranulocytosis is a relatively uncommon complication of sulfonamide therapy but may be precipitated by any one of the commonly used sulfonamides. In general, agranulocytosis occurs after the second week of therapy. Therefore, if a physician elects to continue sulfonamide treatment of a patient longer than one week, it is practically imperative that the level of the blood leukocytes should be determined twice a week thereafter. At the same time, it would be highly desirable to perform a differential count of the leukocytes. Urinary tract complications occur with relative frequency following sulfonamide therapy. A few simple precautions carried out in the home may prevent their appearance. Some responsible person should be instructed to measure and record the daily intake of fluid and output of urine. Of an adult, the daily excretion of urine should exceed 1 liter. This person should also be instructed to watch for the appearance of hematuria and also should be acquainted with the manifestations of pain related to the urinary tract. An added precaution on the part of the physician should be the establishment of an alkaline urine by prescribing 10 to 15 Gm. of sodium bicarbonate daily when sulfathiazole, sulfadiazine or sulfamerazine are being administered. If these instructions and precautions cannot be carried out, the physician will have to assume the responsibility himself. Only in isolated instances are urine analyses necessary.

In summary, the sulfonamides may be safely prescribed in the home without the analyses of blood and urine by laboratory procedures. However, certain of these procedures become necessary if the usual therapeutic doses of a sulfonamide are being prescribed for longer than ten days.

SIMULTANEOUS ADMINISTRATION OF PENICILLIN AND BLOOD PLASMA

To the Editor:—What provision, if any, has been made to add penicillin to blood plasma for simultaneous solution and injection for war wounded? Are there any valid objections or possible incompatibilities?

Herman Goodman, M.D., New York.

ANSWER.—There are no incompatibilities between penicillin and blood plasma. The difficulties that would arise from adding penicillin to dried blood plasma for simultaneous solution would concern the question of the stability and deterioration of penicillin. Unless penicillin is refrigerated constantly in the dry state it may lose its potency rapidly. The use of penicillin at the same time at which blood plasma is given might be of advantage, provided it could be followed by repeated and regular injections of penicillin. If this is not done a single injection would probably be of little benefit, since it is excreted from the body at a rapid rate.

At the present state of knowledge it would not seem to be a practical procedure because of possibility of deterioration, inadequacy of a single dose and impossibility of regulating dosage. It would appear more practical to make separate arrangements for administering penicillin when its use is indicated.

TREATMENT OF BONE CAVITY AFTER REMOVAL OF TUMOR

To the Editor:—A man aged 69 developed a tumor of the upper end of the tibia which failed to be recognized by his adviser and was neglected by him until it was approximately 4 inches in diameter. It proved to be a giant cell tumor and was completely removed without destroying the integrity of the bone shaft and without entering the knee joint cavity, though there was but little to spare. The cavity has filled in by about one half to two thirds of the original space and is clean but has failed to fill in appreciably more for the last three months. Operation was done seven months ago. There is no pain or other disability nor serious difficulty in walking, but the cavity is becoming a nuisance to him. What is the accepted method of treatment for such a bone cavity with wide open mouth and clean surfaces? If a bone paste is indicated, what is the best composition for such paste. Any suggestions as to treatment?

R. H. Gilpatrick, M.D., Nantucket Island, Mass.

ANSWER.—Judging from the query, it may be assumed that the problem is a bone defect just below the knee; in other words, a cavity which is lined with granulating tissue. The time to use bone grafts to fill in such a defect left after the removal of a giant cell tumor is at the time the tumor is removed and not later. Any bone grafting procedure at a later stage would be doomed to failure. It would appear that the patient has ample bone left in the upper tibia for skeletal support, so a graft for strength is not necessary.

If the walls of the cavity are not too steep and the opening too small, one could place skin grafts on the clean granulation tissue with the hope of at least lining the cavity. Pinch grafts could be used in large numbers. A large split graft could be used by placing it on a mold made with dental wax. The skin graft must be tightly fitted over the mold and then pressed down into the cavity, thus holding the skin graft firmly against the granulation tissue.

It is doubtful that any bone paste would work in such a situation.

METHODS OF CONTRACTING UNDULANT FEVER

To the Editor:—What is your opinion of the source of undulant fever? Doctors in this section usually think of raw milk of goats or cows infected with Bang's disease. It occurs to me that a more likely source is meat, raw or only partially cooked.

E. J. Brooks, M.D., Dallas, Texas.

ANSWER.—Any material containing live *Brucella* organisms may be a source of undulant fever. Infection may take place through the broken skin as a result of handling infective materials or by way of the digestive tract as a result of ingesting infective foods. In the infected animal the *Brucella* organisms are usually found in lymph glands, the reproductive organs and the udder. If a person ate uncooked meat containing a diseased lymph gland or raw dairy products made from milk containing the organisms there is a possibility that infection would occur. No one has any information as to the percentage of cases that come from meat or dairy products. There is no way of obtaining such information.

LOCKING OF PENIS IN COITION IN DOGS

To the Editor:—The penile spines described in the answer to the query on page 267 of the January 22 issue of *The Journal* are a bit of folklore which should not be perpetuated in a scientific journal. Because the distal portion of the shaft (corpus cavernosum urethrae) in the dog's penis is stiffened by a bone and the proximal portion of the penis is splinted by a muscular prepuce, penetration is possible before tumefaction occurs. Once the penis is thrust into the vagina, tumescence causes swelling of the corpora cavernosa, which in the dog extends only a short distance up the shaft of the penis, and a large bulb is formed at the root of the penis, which catches inside the female vestibule and causes the locking mechanism referred to in the query. Carl W. Walter, M.D., Boston.

To the Editor:—In reference to a query appearing in *The Journal*, January 22, concerning sexual intercourse in the dog, the reply is not entirely factual. Veterinary physiologists describe the act as consuming fifteen to thirty minutes. The so-called spines referred to are the bulbous glands, a rounded enlargement behind the pars longa glandis and is part of the glans penis. Both the pars and the bulbous are composed of erectile tissue, and their cavernous spaces are largely venous in character and for this reason are slow in erection. However, when these sinuses are completely filled the bulbous glandis becomes large and dilates the posterior portion of the vagina, which is correspondingly large to receive it. Simultaneously the sphincter of the vagina contracts and the male is unable to withdraw the penis in the erect state. In the dog ejaculation is thought to take place after the bulbous gland has become enlarged and the organ cannot be withdrawn. However, there have been some successful inseminations in which withdrawal of the penis has resulted before the enlargement of the bulbous glandis. It is believed that the neutral prostatic secretion is the bulbous glandis. It is required in abundance to counteract the highly acid nature of the vagina and thus afford a viable medium for the spermatozoa when they are ejaculated.

Morton Anmuth, V.M.D., Philadelphia.

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MULTIPLE ECHINOCOCCUS CYSTS OF THE LUNG, LIVER AND ABDOMEN

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AND
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SAN FRANCISCO

The diagnosis of hydatid disease in America, particularly in the Western sheep-raising states, no longer provokes surprise or elation in encountering a medical rarity. In certain localities in Australia,¹ Italy, Argentina² and Iceland hydatid disease receives the first consideration in diagnostic problems, whereas in this country it is usually offered last as a remote possibility. It may be confidently predicted, however, that its occurrence here will become more frequent and that in certain localities its presence must be suspected whenever unusual manifestations of hepatic or pulmonary disorders cannot be explained on other seemingly more rational bases.

The disease is most commonly found in areas where sheep pasturage prevails and where dogs are in intimate association with sheep and human beings. The cysts found in man, sheep, ox or hog represent the larval stage of the tapeworm *Taenia echinococcus*, which is harbored in the adult form in the intestine of dogs and related species. The egg liberated in the dog's intestine and transferred from dog to man, sheep or hog through intimate contact reaches the stomach and the small intestine, where the alkaline juices digest the egg membrane, liberating the embryo, which penetrates the wall of the intestine and reaches the liver and other organs by blood stream migration. In its new location the embryo is soon surrounded by a limiting membrane produced by foreign body reaction, within which a germinal layer is developed capable of producing innumerable brood capsules and daughter cysts. The life cycle of the tapeworm is completed when a dog or a member of related species eats the infected entrails or carcass of a sheep or hog and the larvae reach the intestine of the dog, where they mature into the adult tapeworm.

Although infection in man has been ascribed to eating infected berries growing in sections of the country

inhabited by infected moose and wolf,³ this must be very rare and most improbable.

As we become more conscious of its existence, greater care must be exercised in its diagnosis, and one must not be too easily led into a facile though false diagnosis on the basis of a positive complement fixation or a positive reaction to the intradermal test. Both have been found fallible, as experience sadly records. One of the always surprising features of the disease is the extent to which organs may be involved without subjective or objective evidence of its presence. Moreover, if one accepts Dew's⁴ estimate of the rate of increase in the size of a cyst as approximately 1 mm. a month, the disease has been present for years before asserting its presence either subjectively or objectively.

The following cases are presented for their unusual and instructive clinical features, and for the problems presented in their surgical removal:

CASE 1.—M. Y., a Basque sheep herder aged 53, born in the Pyrenees but a resident of this country for many years, had recently noted an increasing shortness of breath with some thoracic pain, but without cough, sputum or hemoptysis. The patient was short and overweight, the only obvious abnormality being a small epigastric midline hernia. Examination of the chest disclosed expansion equal but limited, dullness at both bases and particularly in the right midportion, but some also in the left midportion. The apexes were resonant. The breath sounds were diminished throughout both lungs, but no rales were heard. His heart was normal; the blood pressure was 132 systolic, 90 diastolic. There was no enlargement of the liver. The red cells numbered 5,590,000 per cubic millimeter, the white cells 11,000 without eosinophils, the hemoglobin 99 per cent. The patient was extremely sensitive to echinococcus cyst fluid introduced intracutaneously.

A roentgenogram (fig. 1) revealed two large cannon-ball shadows in the chest. Under fluoroscopic examination the exact site of the attachment of the cyst to the right parietal pleura was determined as being posterior to the 4th rib, and on the left the nearest approach to the cyst was found to be at the level of the 7th rib anteriorly.

After several days of high vitamin diet supplemented by vitamin concentrates, the first operation was performed on Sept. 10, 1938. Under cyclopropane anesthesia a portion of the right 4th rib between the posterior and the anterior axillary line was removed. The cyst was found to be firmly adherent to the parietal pleura. A large trocar was inserted, and the limpid, slightly milky fluid was aspirated and sent to the clinical laboratory in a sterile container for diagnostic use in other suspected cases. About 10 cc. of solution of formaldehyde diluted 1:10 was introduced in the cyst, and after a few minutes wait the cyst was incised and its contents, including many daughter cysts and the germinal layer, were easily separated from their attachments and sucked out with the sucker usually employed in tonsillectomy. Following the delivery of the cyst wall, apparently normal surface of lung, as disclosed by carbon particles normally deposited in alveoli,

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1. Robb, D.: Hydatid Cyst of Lung with Extraordinary Complications, Australian & New Zealand J. Surg. 10: 191 (Oct.) 1940. Barnett, L.: Incidence and Prevention of Hydatid Disease, New Zealand M. J. 41: 258 (Dec.) 1942. Dew.⁴

2. Ivanisovich, O., and Rivas, C. J.: Tratamiento de los quistes hidatídicos del pulmón, Bol. d. Inst. clin. quir. 18: 458 (July) 1942. Jorge, J. M., and Gofí Moreno, I.: Hidatidosis secundaria broncogenética, Bol. y trab., Acad. argent. de cir. 26: 373 (June 10) 1942. Arce, J.: Hydatid Disease (Hydatidosis): Hydatid Cyst of Lung, Arch. Surg. 43: 789 (Nov.) 1941.

3. Brown, A.: Hydatids of the Chest & Wall, in Christopher, Frederick: Textbook of Surgery, ed. 3, Philadelphia, W. B. Saunders Company, 1942, p. 947.

4. Dew, H. R.: Hydatid Disease: Its Pathology, Diagnosis and Treatment, Sydney, Australasian Medical Publishing Company, Ltd., 1928.

was everywhere visible in the cavity formerly occupied by the cyst. The cavity was thoroughly wiped with gauze moistened with 10 per cent solution of formaldehyde and washed out with salt solution. A small catheter was placed in the cavity, emerging from the anterior end of the wound. No attempt was made to obliterate the cavity by sutures, as it



Fig. 1 (case 1).—Multiple echinococcus cysts of the lung in a sheep heifer aged 53

was easily collapsed by positive intratracheal pressure. The wound was closed in layers with interrupted sutures. When the last stitch was placed, a pronounced emphysema of the wound tissues prompted opening the previously clamped catheter. A steady stream of air escaped, indicating a fairly large opening into the bronchus.

Immediately after closure of the first wound, a second incision was made over the left 7th rib and a portion removed. The visceral pleura was everywhere free, as shown by a freely moving lung visible through the intact parietal pleura. Accordingly the 6th rib was removed, but again a freely moving lung was visible through the intact parietal pleura. Two large plain gauze packs were placed in the wound, compressing the area immediately over the cyst, with the expectation that the visceral and parietal pleurae would become adherent. The wound was closed without drainage, completely burying the gauze packs.

The catheter emerging from the cyst cavity on the right was placed under water, and for about twenty-four hours there was a free discharge of air through the tube, after which there was no further escape of air. About 1 ounce (30 cc.) of bloody fluid was discharged in the next twenty-four hours, at the end of which time the catheter was removed. A small drain of rubber tissue which had been placed at the angle of the wound was also removed after forty-eight hours had elapsed.

After operation the patient was somewhat dyspneic, and intranasal oxygen was administered for five days. On the 7th day the wound in the left chest discharged considerable blood tinged but clear fluid. A roentgenogram revealed a fluid level in the left lower chest. Under cyclopropane anesthesia the



Fig. 2 (case 1).—Appearance of lung following removal of cysts in two stage operation (see fig. 1).

following the aspiration of 20 cc. of cyst fluid, 20 cc. of 10 per cent solution of formaldehyde was injected into the cyst. After the lapse of a few minutes the cyst wall was incised between the traction sutures and its contents were sucked out, including the germinal layer lining the cavity. The walls of the cavity were wiped with gauze moistened with 10 per cent solu-

tion of formaldehyde and the cavity washed with saline solution. A small catheter was placed in the bed of the cavity and connected with rubber tubing leading to an underwater seal. The wound in the chest wall was closed tightly around the catheter with interrupted sutures. There was no escape of air at any time, and the catheter was removed on the third day. An uneventful recovery followed, with primary healing of both wounds (fig. 2).

The patient reentered the hospital for the repair of the epigastric hernia on July 23, 1941, three years later, at which time he was without symptoms of any kind referable to the chest, and roentgenograms were normal.

CASE 2.—B. R., a school girl aged 18 years, was operated on in March 1942 for appendicitis, when a pelvic cyst adjacent to the right ovary was accidentally opened and found to contain numerous daughter cysts. These proved on microscopic section to be echinococcus cysts. Postoperatively a pulmonary complication occurred which necessitated a roentgenogram of the chest. This disclosed rounded shadows above the right diaphragm, which were interpreted as being located in the lung. Complete recovery followed the appendectomy.

On May 19, 1942 the patient entered Stanford Hospital for further study and treatment.

Her past history revealed little illness except for the previous appendectomy. Despite a voracious appetite she had lost about 6 pounds (2.7 Kg.) in the three months preceding admission. As a child she had played constantly with 3 dogs.



Fig. 3 (case 2).—Echinococcus cysts of the liver projecting into the pleural cavity, but not into the lung, by penetration through the diaphragm.

Physical examination revealed few abnormalities. There were pleural crepitations low in the right anterior axillary line with suppression of breath sounds, but otherwise the lungs were clear. The liver and spleen were not felt, and there were no abnormal masses felt in the abdomen. Her temperature was 37.2 C. (98.9 F.), pulse rate 90, respiratory rate 20, blood pressure 106/72. The urine was normal, the red cells numbered 4,930,000 and the white cells 9,970, of which 59 per cent were neutrophils, 1 per cent eosinophils, 39 per cent lymphocytes and 1 per cent monocytes; the hemoglobin was 91 per cent (Sahli).

The echinococcus skin test was strongly positive, the immediate reaction showing a 10 mm. wheal, with pseudopodia, and a 50 mm. zone of erythema.

A pneumoperitoneum suggested abnormal contours both of the spleen and of the liver suggestive of cysts in these organs, but the masses seen in the roentgenogram of the chest still seemed to be in the lung (fig. 3).

On May 21 a thoracotomy was performed under cyclopropane anesthesia. An anterolateral incision was made in the sixth interspace without division or excision of the ribs, which were easily separated with the rib spreader. When the lung was severed from its attachments to the diaphragm, there were disclosed emerging through the dome of the diaphragm 3 separate cystic masses measuring 4 by 6 cm., 4 by 4 cm. and 3 by 3 cm. respectively. In an attempt to excise the largest, its wall was penetrated with the evacuation of clear fluid and many daughter cysts. These were all carefully sucked up by the aspirator. The diaphragm was incised, revealing at least 2 large cysts in the liver, which were the

source of the masses penetrating the diaphragm. Another thin walled cyst could be palpated on the under surface of the liver lateral to the gallbladder. One of the cysts in the liver was opened, and milky fluid and many daughter cysts were evacuated by suction. The lining of the cyst was also carefully removed in its entirety by suction, revealing a fibrous lined cavity in the liver at least 10 cm. in diameter. The walls of the cavity were wiped with gauze moistened with 10 per cent solution of formaldehyde and the cavity was washed with saline solution.

The second cyst in the liver was opened and similarly treated by evacuation with suction, removal of the entire cyst lining by suction, followed by the application of 10 per cent solution of formaldehyde to the walls of the cavity. This cyst was multilocular, about 10 cm. in diameter. The portion of the diaphragm through which the cysts had penetrated into the thorax was cleanly excised by an encircling incision through normal diaphragm. The two cavities in the liver were partially closed by chromic catgut sutures approximating their fibrous walls. Salt solution was introduced to fill any residual spaces. The phrenic nerve was crushed as it coursed over the pericardium, and the rent in the paralyzed diaphragm was easily closed with interrupted silk sutures. This closure of the diaphragm was easily made because of the collapse of the underlying two large intrahepatic cysts. Palpation and systematic examination of the accessible lung having revealed no evidence of other cysts, the incision in the thoracic wall was



Fig. 4 (case 2).—Appearance after operation, showing elevated diaphragm following excision of portion of diaphragm containing cysts and crushing of phrenic nerve (see fig. 3).

closed in layers. The lung was well inflated before closure, and drainage was not provided.

The postoperative course was without incident until the 6th day, when generalized abdominal pain, tenderness without much splinting, a chill, temperature of 40 C (104 F.) and a pulse rate of 140 caused considerable apprehension lest the subhepatic cyst palpated at the operation had ruptured into the abdominal cavity. Subsequent events proved that this had not occurred. The 7th day was a repetition of the 6th, but gradual improvement thereafter led to complete recovery and discharge from the hospital on the 17th postoperative day. The two days of fever were explained on the probable discharge into the abdominal cavity of salt solution which had been placed in the formaldehyde treated cavities in the liver.

Following an uneventful convalescence the patient reentered the hospital on August 10 for laparotomy and removal of the subhepatic cyst. In the interim she had gained about 8 pounds (3.6 Kg.) and felt very well except for occasional pains in the right flank. Physical examination revealed few abnormalities. The temperature was 36.8 C. (98.2 F.), pulse rate 70, respiratory rate 18 and blood pressure 120/70. The chest showed a well healed scar and the physical signs of an elevated paralyzed diaphragm. The abdomen was free from tenderness or abnormal masses. The urine was normal. The red cells numbered 4,490,000 per cubic millimeter and the white cells 8,050, of which 72 per cent were neutrophils, 4 per cent eosinophils, 1 per cent basophils, 16 per cent lymphocytes and 7 per cent monocytes. A roentgenogram of the chest (fig. 4) showed both peripheral lung fields clear and paradoxical movements of the right diaphragm.

On August 13 a short upper right rectus incision was made for exploration of the abdomen. In the right pelvis was a 2 cm. nodule (fig. 5b). After the incision had been enlarged this was found to lie just lateral to and firmly attached to the uterus, partially surrounded by omentum. It was excised with the radiocautery. In the left upper abdomen, lying between the

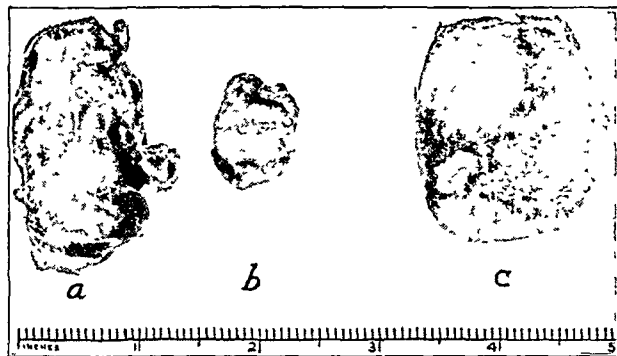


Fig. 5 (case 2).—a, echinococcus cyst removed from between left diaphragm and spleen; b, cyst excised from right pelvis; c, cyst excised from undersurface of liver.

spleen and the diaphragm, was a second 5 cm. nodule (fig. 5a), which was freed from the spleen with considerable bleeding. Its excision from the diaphragm left a small defect, which was closed with catgut sutures. These were covered by the spleen when it fell back into its normal bed.

A third 4 cm. sized cyst (fig. 5c) was removed intact from the under surface of the liver, leaving a raw liver surface, which was partially closed with a continuous catgut suture. A search of the abdomen for other cysts or masses was negative. Because of the possibility of bile drainage from the bed of the third cyst, three small cigaret drains were introduced to lie adjacent to the raw surface, emerging from a separate stab wound in the flank. During the operation 1,000 cc. of isotonic solution of sodium chloride was administered by hypodermoclysis and 500 cc. of blood by vein.

An uneventful recovery was followed by discharge from the hospital on the 12th postoperative day.

The following case is presented briefly because of the difficulties of diagnosis and because of erroneous conclusions based on a strongly positive reaction to the intradermal injection of echinococcus fluid.

CASE 3.—Mrs. E. P., aged 59, had been under observation at a naval hospital since Dec. 24, 1941 for cough, bloody sputum and pain in the right chest, when she entered a civilian

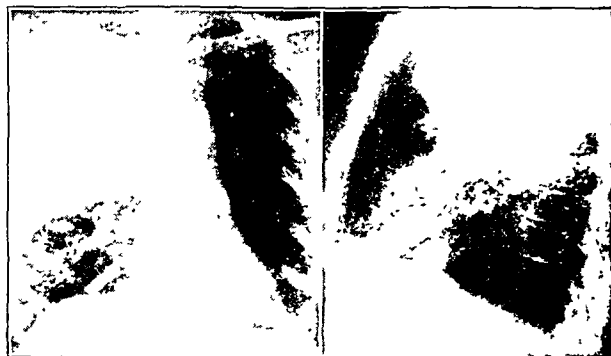


Fig. 6 (case 3).—Presence in chest on Aug. 10, 1942 of a large mass interpreted as being compatible with echinococcus disease, this diagnosis undoubtedly being influenced by a strongly positive intradermal test for echinococcus

hospital for further examination. Here the intradermal injection of echinococcus fluid produced a definite local urticarial reaction, elevation of temperature and pronounced focal signs and symptoms in the right chest. A roentgenogram (fig. 6) was interpreted as being compatible with echinococcus disease.

A review of the evidence, however, revealed certain significant findings: A roentgenogram in December 1941 (fig. 7) was interpreted as showing multiple metastatic nodules in the right upper lung field, the source of which had not been determined even after numerous other roentgenographic studies. A bronchoscopy on Jan. 5, 1942 had disclosed a "widening and thickening of the mediastinum," which was even more pronounced on April 17, when both primary bronchi were found



Fig. 7 (case 3).—Presence on Dec. 24, 1941 of multiple masses interpreted as being metastatic tumor nodules. A primary bronchogenic tumor was subsequently found. Appearance at this early date bears no resemblance to that of a primary tumor, although later studies might be so interpreted (fig. 6).

stenosed by flattening of their medial walls, strong evidence of a mediastinal neoplasm, probably metastatic. On Aug. 28, 1942, on a preoperative diagnosis of an intrapulmonary neoplasm, a short exploratory incision was made by resection of 4 cm. of the 4th rib posteriorly. A large firm, solid mass was found in the lung, biopsy of which disclosed a cellular tumor composed of sheets of large epithelial tumor cells, some of which showed an alveolar arrangement, with many mitotic figures. The diagnosis was an anaplastic carcinoma of the bronchus. As all evidence, roentgenographic as well as bronchoscopic, indicated a totally inoperable neoplasm, the wound was closed without attempting a pneumonectomy. The patient died four weeks later. A necropsy was not permitted.

COMMENT AND SUMMARY

1. Multiple echinococcus cysts may occur in the lung, in the abdomen and in the liver, almost without symptoms. In case 1, 2 large cysts of the lung which had probably been present for years produced only moderate dyspnea and some pain in the chest. In case 2, symptoms were minimal, despite multiple abdominal cysts in the pelvis and under the liver, as well as 4 cysts involving both diaphragms, and 2 large intrahepatic cysts.

2. Positive reactions following the intradermal injection of the echinococcus antigen cannot be relied on as clinching evidence in the diagnosis of echinococcus disease. Eosinophilia is not an invariable accompaniment.

3. In cases in which the cyst is in close relationship to the upper surface of the diaphragm, a large enough pneumoperitoneum should be given to explore the under surface clearly, since hepatic cysts may penetrate the diaphragm.

4. Cysts in the abdomen may be completely excised, particularly when surrounded by omentum or when appearing on the surface of other organs. The investing fibrous tissue, which is often partly calcified, permits excision without fear of entering the cyst. When calcification has occurred in the liver or lung, it is necessary only to suck out the chitinous or germinal layer of the cyst, leaving behind the calcified wall.

5. The removal of thin walled cysts of the lung by suction may be complicated by a pneumothorax, resulting presumably from small rents in the lung, unless

provision for the escape of air is made at the operation by the introduction of a small catheter into the bed of the cyst connected externally with an under water seal. This may usually be removed within forty-eight to seventy-two hours.

6. The problem of removal of the dangerous elements of a cyst may be met as follows: Withdrawal of about 30 to 50 cc. of the cyst fluid by aspirating syringe and reinjection of about 10 to 20 cc. of 10 per cent solution of formaldehyde. After several minutes a small incision is made in the cyst, and its contents are withdrawn with a large sucker. The contents include hooklets, daughter cysts and the germinal layer, which strips easily and is effectively removed with the sucker. The walls of the remaining cavity are wiped with gauze moistened with 10 per cent solution of formaldehyde and the cavity is washed out with saline solution.

7. Drainage or packing of the cyst cavity is not necessary and is definitely contraindicated to avoid secondary infection of a potentially incollapsible cavity. Except in the presence of pus due to a secondary infection which obviously must be drained, the cyst cavity may be filled with salt solution and the incision of approach may be completely closed without drainage.

8. Multiple cysts of the lung involving both sides of the thorax are most safely removed by two stage procedures.

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THE ORGANIZATION OF A RED BLOOD CELL TRANSFUSION SERVICE

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Attention has recently been focused on the use of red cell residues that are by-products of plasma production as a substitute for whole blood transfusions in the treatment of anemia.

The first work in the preservation of red blood cells suspended in isotonic solution of sodium chloride was reported by Rous and Turner¹ in 1916. Their experiments, however, were limited to animal transfusions. In 1918 Robertson,² in reporting the first blood bank transfusions in World War I, actually gave red cell suspensions rather than whole blood. Concentrated red cell transfusions were reported by Castellanos³ in 1937 and by Castellanos and Riera.⁴ Since 1940 there have been a number of reports by British workers on the practicality of giving multiple red cell transfusions both in the concentrated form and resuspended

From the American Red Cross Blood Donor Service.

1. Rous, P., and Turner, J. R.: Preservation of Living Red Cells in Vitro, *J. Exper. Med.* 23: 219 (Feb.) 1916.
2. Robertson, O. H.: Transfusion with Preserved Red Cells, *Brit. M. J.* 1: 691 (June 22) 1918.
3. Castellanos, A.: La transfusion de globules, *Arch. de med. inf.* 6: 319 (July-Sept.) 1937.
4. Castellanos, A., and Riera, R.: Sobre la transfusion de globulos y la transfusion de plasma; sus tecnicas e indicaciones, *Bol. Soc. cubana de pediat.* 9: 234 (June) 1937.

in isotonic solutions.⁵ The more recent articles⁶ in this country confirm on the whole the results obtained and point out not only the saving in whole blood but also the superiority of red cell transfusion in the treatment of certain anemias.

The "Blood for Britain" (plasma) program (1940),⁷ a cooperative project of the New York chapter of the American Red Cross and the Blood Transfusion Association, was the first experience in this country with large scale blood procurement. The Presbyterian Hospital in New York City was one of the nine hospitals assisting in the work, and here the plasma was produced by the sedimentation method after three days. This made available in the hospital for the first time a large source of supply of fresh red cells. Plasma formerly had been but a by-product of "outdated" whole blood in the bank, and the "outdated" residual cells were not suitable for transfusion purposes. Scudder⁸ prepared and gave 227 red cell transfusions obtained from fresh citrated blood during this period. The suspensions were isotonic, usually 500 cc. of cell residual in 500 cc. of isotonic solution of sodium chloride. These transfusions were type specific. The reactions rate was comparable to the existing one at the hospital for whole blood transfusions.

During the past three years a number of the larger hospitals in this country, both military and civilian, have used red cell suspensions on a small scale for transfusion. The material has been available as a by-product of plasma production and has been offered as an additional blood bank service⁹ in these hospitals. Hoxworth¹⁰ at the Cincinnati General Hospital has provided red cell suspensions for transfusions as part of the regular service of the blood and plasma bank. Over 300 of these transfusions have been given there, with results in general agreement with the findings reported in the literature.

Almost immediately after the conclusion of the Blood for Britain project, the pilot center of the American Red Cross Blood Donor Service was established in New York City in February 1941.¹¹ The distance of the processing laboratory from the bleeding center, however, precluded any possibility of salvage of the red cells for transfusion purposes. With the rapid expansion of the Blood Donor Service, processing laboratories and bleeding centers at various points in the country came into closer proximity. However, even then large scale work with red cell suspensions was delayed until

a year ago, because of the primary necessity of concentrating all efforts on plasma production.

The salvage of red cell residues for transfusion purposes presented several problems to the Blood Donor Service not encountered in local blood and plasma banks. The blood was collected by a bleeding team at varying distances from the laboratory. The blood had to be transported to the laboratory and, after withdrawal of the plasma, the residual cells had to be resuspended and then shipped back to the blood donor center for distribution and use. The question arose whether significant change would take place in the cells because of the transportation. Further, the handling of the blood by three separate groups of people not only offered the chance for breaks in technic because of divided responsibility but also gave real opportunity for transcription errors. In order that the greatest possible plasma yield might be obtained, the blood is centrifuged at 2,100-2,400 revolutions per minute for thirty to forty-five minutes. What effect there would be on the fragility of the cells as contrasted to those obtained as a by-product of sedimentation methods or of slower centrifugation had to be determined. With the transportation and multiple handlings necessary, the problem of placing responsibility for the quality of the final product had to be clarified.

Because of these specific problems not similarly encountered in other work in this field, much of the previous work had to be repeated before it could be determined whether the results were applicable also to red cells treated as these must be.

Within the last year one (W. B. C.)¹² and later another of us (W. T.) have prepared and have given nearly 10,000 red cell transfusions. The majority have been type specific. The cells have been resuspended in pyrogen free isotonic solution of sodium chloride up to the original 500 cc. volume. The clinical results of this work are being reported in detail.¹³ In conjunction with this, studies on the sterility of the cells and the survival in vivo of the cells after transfusion have been carried out. The life of the cells in vitro as measured by degree of hemolysis and cell fragility in various types of preservative solutions has also been investigated. The particular response to this therapy in specific types of anemia has also been noted.

On the basis of these pilot studies a Red Blood Cell Transfusion Service has been organized, to be conducted by the technical staff of the American Red Cross Blood Donor Service. The technical operations of the service are under the supervision of the Division of Medical Sciences of the National Research Council through its Subcommittee on Blood Substitutes.

The Red Blood Cell Transfusion Service is operated locally through Red Cross blood donor centers, under the control in each center of its technical supervisor. It is being initiated only in those centers that are sufficiently near processing laboratories to allow close collaboration and where transportation between the center and the laboratory requires only a short time.

The service is conducted without cost to those being served. No financial profit is allowed to be made by any person or institution in connection with this service, since the project is supported financially by the American Red Cross as part of its blood donor service.

The service is tendered to military hospitals wherever requested and practical. It is to be extended to com-

5. Watson, L.: Red Cell Suspension and Transfusion, *Lancet* 1: 107 (Jan. 23) 1943. MacQuaide, D. H. G., and Mollison, P. L.: Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells, *Brit. M. J.* 2: 555 (Oct. 26) 1940. Dacie, J. V., and Mollison, P. L.: Survival of Normal Erythrocytes After Transfusion in Patients with Familial Hemolytic Jaundice, *Lancet* 1: 550 (May 1) 1943. Davidson, S., and Stewart, C. P.: Transfusion of Red Cells, Correspondence, *Brit. M. J.* 1: 644 (April 26) 1941. Williams, G. E. O., and Davie, T. B.: Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia, *ibid.* 2: 641 (Nov. 8) 1941. Whitby, L. E. H., Vaughan, J., and Brown, H.: Discussion on Therapeutic Value of Transfusion of Derivatives of Blood, *Proc. Roy. Soc. Med.* 34: 257 (March) 1941.

6. Alt, H.: Red Cell Transfusions in the Treatment of Anemia, *J. A. M. A.* 122: 417 (June 12) 1943. Evans, R. S.: Concentrated Red Cells as a Substitute for Whole Blood in Transfusion Therapy of Anemia, *ibid.* 122: 793 (July 17) 1943. Murray, C. K.; Hale, D. E., and Shaar, C. M.: Red Blood Cell Suspension Treatment of Anemia, *ibid.* 122: 1065 (Aug. 14) 1943. Blum, L. L.: Present Day Status of Combined Blood Plasma Bank with Reference to the Use of Concentrated Red Cell Suspensions, *J. Indiana M. A.* 36: 187 (April) 1943. Lindy, J. S., and others: Annual Report for 1942 of Section on Anesthesia, Including Data and Remarks Concerning Transfusion of and Suspension of Erythrocytes, *Proc. Staff Meet., Mayo Clin.* 18: 148 (May 19) 1943.

7. Report of the Blood Transfusion Association Concerning the Project for Supplying Blood Plasma to England, carried on jointly with the American Red Cross from August 1940 to January 1941.

8. Scudder, J., cited by Taylor, E. S., in discussion on Use of Substitutes for Blood Transfusion, *New York State J. Med.* 42: 1480 (Aug. 1) 1942.

9. Annual Report for 1942 of the Section on Anaesthesia, Including Data and Remarks Concerning Blood Transfusion and the Use of Blood Substitutes, *Proc. Staff Meet., Mayo Clin.* 18: 148 (May 19) 1943.

10. Hoxworth, P.: Personal communication to the authors.

11. Taylor, E. S.: Blood Procurement for the Army and Navy, *J. A. M. A.* 117: 2123 (Dec. 20) 1941.

12. Red Blood Cells Salvage, *Science News Letter* 43: 138 (Feb. 27) 1943.

13. Cooksey, W. B., and Horwitz, W. H.: Use of Salvaged Red Cells, to be published.

munities when it is practical by furnishing red cell suspensions to selected physicians for use in hospitals of recognized standing for clinical investigation. The selection of physicians and hospitals is made as agreed on by the American Red Cross and the Division of Medical Sciences of the National Research Council, and the service may be made available only to those physicians and hospitals that enter into an agreement to carry out the prescribed methods and technic.

Final responsibility for the administration of the cells is assumed according to the signed agreement provided and is not transferable back to the American Red Cross Blood Donor Service to the Army, to the Navy or to the plasma processing laboratory.

The methods and technic prescribed for the preparation, storage and administration of the red blood cell suspensions are as follows:

1. The blood is withdrawn at the Red Cross center, according to the usual procedure.

2. The technician typing the blood receives the full bottle of blood properly tagged and accompanied by a donor record card and serology tube.

3. The name and number on the card, tube and bottle are crosschecked for transcription errors.

4. The original typing of the blood is done from the serology tube with two different lots of anti A and anti B typing serums of known high potency and the results are determined and recorded by two different technicians. Only type O bloods will be selected.

5. A yellow tag is attached to the bottle and the following information entered on the tag: (a) date of bleeding, (b) donor's serial number, (c) type, (d) expiration date.

6. A separate list giving the serial number and name for each bottle selected is made out and included with the bloods, which are shipped to the processing laboratory in a separate refrigerated container.

7. At the laboratory, the procedure is as follows:

(a) Serology tests are done and only bloods reported as negative are used.

(b) The bottle of cells is to be appraised for (1) plasma cell ratio (only full bleedings are utilized), (2) lipemia, (3) hemolysis, (4) mechanical defects, (5) breaks in technic, (6) presence of large clots. Bottles showing such defects are discarded.

(c) After centrifugation and withdrawal of the plasma, a sterile solid stopper is placed in the bottle.

The original white tag must not be removed from the bottle at the laboratory.

(d) Resuspension of the cells (either in the processing laboratory or in the outside laboratory; the procedure is the same in the 2 cases). Resuspension of the cells must be done in a dust-proof room with a filling buret and a second sterile solid rubber stopper inserted. Known pyrogen free isotonic solution of sodium chloride (or other solution approved by the National Research Council) is used as the diluent, and is added as soon as possible after centrifugation of the blood.

(e) Resuspended cells are returned in refrigerated containers to the blood donor center and the tags on the bottles checked with the list originally prepared. No pilot tubes are returned with the bottles.

(f) Bottles of resuspended cells are stored at 4 to 10 C. until distributed. Before distribution the cells are to be appraised for hemolysis and possible color change.

8. *Sterility.*—The dispensing laboratory or station must ascertain the sterility of all procedures at the outset and at regular intervals check the maintenance of this sterility. Sterility tests are to be done as follows:

(a) Five cc. of the cell suspension is placed in each of two tubes containing 20 cc. of a good nutrient broth containing dextrose.

(b) The tubes are incubated at 37 C. for fourteen days.

Fifty negative cultures are to be obtained at the outset and before any cell suspensions are distributed. Thereafter every fifth bottle is tested until three hundred negative cultures are obtained. As a routine procedure, one bottle is tested at random for each day of operation thereafter.

The appearance of contaminated bottles demands a thorough investigation of the causative factors and a cessation of activities until an adequate explanation is obtained. The procedure as indicated for sterility testing must be carried out before the cells are again released for distribution.

9. *Administration of the Cells.*—(a) All resuspended cells must be stored at 4 to 10 C. after distribution to the hospitals. Care must be taken not to let the temperature fall below the 4 degree level. If there is any question that freezing has occurred, the bottle of cells must be discarded.

(b) Cells must be used within five days of the date of bleeding.

(c) The cells are not to be removed from the original container until just before use.

(d) Resuspended cells should be observed at intervals for the appearance of hemolysis or any change in color of the supernatant fluid. If a violaceous or blackish red color appears, if there is any question as to the condition of the material or if any unusual odor is apparent, the cells must be discarded.

(e) The cells must be retyped and cross matched at the hospital immediately before use. A sterile pipet is to be inserted in the bottle and a specimen removed for this purpose. The cells must be given within five hours of the time the bottle has been entered.

(f) The cells are not to be dispensed directly from the original container. Immediately prior to administration they must be poured from the original bottle into the dispensing flask in order that gross clots or unusual odors may be detected.

(g) The cells must be filtered through four layers of 44 by 40 bandage roll gauze or used with a 100 mesh stainless steel filter placed in the administration set.

(h) The cells must not be warmed before use.

(i) If the entire contents of the bottle are not used, the remainder is to be discarded.

(j) The bottles in which the cells were contained must be returned to the Blood Donor Center from which they were distributed.

(k) The cells are not to be given to antepartum or postpartum patients unless there has been full appraisal of the Rh factor.

10. A report form for each bottle of cells is to be completed and returned to the technical supervisor of the American Red Cross Blood Donor Center dispensing the cells. The service will be discontinued if these reports are not properly executed and forwarded within a reasonable length of time.

As experience is accumulated, it is hoped that with the use of preservative solutions the service may be extended and the red cell suspensions transported over a considerable area with a longer dating. Combination of these red cells with other types of blood substitutes, such as gelatin solution, offer investigative possibilities.

SUMMARY

1. On the basis of pilot work with ten thousand¹⁴ red cell transfusions, it appears that this by-product of the plasma program for the armed services is suitable for transfusion use as a substitute, at least in part, for whole blood.

2. A Red Cell Transfusion Service is being extended from the two pilot blood donor centers to those centers which are proximate to the plasma processing plants. This service is conducted by the Blood Donor Service of the American Red Cross.

3. The service will be available first to Army and Navy hospitals and secondly to accredited civilian hospitals, without cost, for clinical investigation.

4. General rules as to the organization of the technical aspect of the service have been laid down.

5. Investigation is under way to extend the possible use of these red cell transfusions and further ascertain their value.

Detroit Blood Donor Center.

¹⁴ Since this article was submitted for publication, the total number of red cell transfusions given has increased to eighteen thousand.

USE OF SALVAGED RED CELLS

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When the American Red Cross Blood Donor Service opened its Detroit unit in November 1941 it was at once our desire to make use of red cell residues that were discarded after the plasma had been drawn off. However, it was not until July 1942, when Parke Davis & Company began to process plasma from the Detroit Blood Donor Center, that the opportunity presented itself. As there were no reports available on the use of cells which had been subjected to high speed centrifugation and few reports available as to the proper fluid for resuspending such cells, various studies were undertaken before these resuspended cells were used clinically. After the essential laboratory studies had been completed and nearly two hundred bottles of cells were administered to selected patients, approval was given by the National American Red Cross Blood Donor Service and the Surgeon General's Office of the Army to extend this program. On Jan. 1, 1943 the Detroit Red Cross Blood Donor Service began to deliver cells to fourteen nearby hospitals that agreed to carry out certain necessary regulations in the storage and administration of the cells. To date, 7,864 bottles of cells suspended in isotonic solution of sodium chloride (0.85 per cent) adjusted to a pH of 7.2 have been furnished these hospitals, and a follow-up study on 4,050 such cell transfusions has been completed.

From the beginning, the problem of sterility has been given serious consideration. We have cultured numerous bottles of blood and of resuspended cells without finding any contaminations. It did not seem feasible to continue to culture each bottle of cells in such a large program as this, since our laboratory studies and accumulated experience indicated that stored blood cells must be used in a relatively short time after the blood is obtained from the donor. It was found that, unless special diluents other than saline solution alone were used, the cells which were returned to us after high speed centrifugation could not be held for more than five or six days from the date of bleeding without showing considerable hemolysis or definite alteration in the fragility index of the cells.

When red cell suspensions were deliberately contaminated for the purpose of investigation, it was found that, occasionally within twenty-four hours of storage at 4 to 6 C., and almost always after forty-eight hours of such storage, the contaminated cells turned a dark red and the supernatant diluent showed a purplish red discoloration that was at once distinguishable from unaltered cell suspensions. Since the method of distribution which we proposed rendered impossible the use of these cells before forty-eight hours from the time of bleeding, it was decided that this gross macroscopic test could be used in lieu of actually culturing each bottle of cells. As the cells were diluted back to their original volume with isotonic solution of sodium chloride there was ample supernatant diluent for a careful inspection.

After resuspension, the cells were retained in their original bottles and were not opened until the final typing and cross matching tests were done at the hospital just before administration. The technicians in charge of the blood banks using these cells were instructed to discard any bottle showing abnormal coloration as well as bottles not used by the fifth day from the date of bleeding.

As has been shown by Mollison and Young¹ and by Denstedt,² the development of hemolysis in stored blood in vitro does not parallel the fate of stored blood that has been transfused. Consequently, before these red cell suspensions were released on a large scale, numerous patients were studied to determine the occurrence of hemolysis in vivo by estimating the icterus index on the recipient's blood before and for several days after transfusion of the cells. In addition, urinalyses were made for several days after cell transfusion to determine the presence of hemoglobin or any of its end products. In the 200 transfusions so studied there was only 1 case in which the icterus index was increased and in which abnormal hemoglobin products not present before the transfusion were found in the urine. In this instance 5 liters of suspended cells was given an Rh positive patient with an extremely grave anemia of pregnancy. She was subsequently given stored whole blood, which produced an identical reaction. This could not be explained on the basis of the age or condition of the cells. In this patient the hemolytic process subsided at the sixth month of pregnancy, and she was carried to term. It was the opinion of the hematologist that this patient had an unusual hemolytic anemia of pregnancy. In the follow-up study of 4,050 bottles of suspended cells furnished Detroit hospitals, no other instance of a hemolytic reaction was reported.

Previous reports on the use of red cells dealt with undiluted or packed cells,³ but this method has certain disadvantages. In the first place, as Watson pointed out, pressure may be required to administer packed cells through the standard 18 gage needle. With the additional volume provided by the diluent in resuspended cells, the gravity method of administration is preferable both for its simplicity and for its safety. Furthermore, packed cells, when resuspended in saline solution at the end of five days' storage, show greater hemolysis and are more fragile than cells resuspended in saline solution immediately after withdrawal of the plasma. As already mentioned in the discussion of sterility problems, it has been our experience that the appearance of an ample supernatant liquid above the cells is a most useful aid in indicating that a deleterious change has taken place in the cells. We do not believe that the extra volume of the saline diluent is important.

As shown by chart 1, salvaged cells which have been subjected to high speed centrifugation reacted differently when resuspended in the various standard intravenous solutions ordinarily considered as isotonic

1. Mollison, P. L., and Young, I. M.: Failure of In Vitro Tests as a Guide to the Value of Stored Blood, *Brit. M. J.* 2: 797 (Dec. 6) 1941.

2. Denstedt, O. F.; Osborne, D. E.; Stansfield, H., and Rochlin, I.: Survival of Preserved Erythrocytes After Transfusion, *Canad. M. A. J.* 48: 477 (June) 1943.

3. MacQuaide, D. H. G., and Mollison, P. L.: Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells, *Brit. M. J.* 2: 555 (Oct. 26) 1940. Williams, G. E. O., and Davie, T. B.: Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia, *ibid.* 2: 641 (Nov. 8) 1941. Watson, L.: Red Cell Suspension Transfusions, *Lancet* 1: 107 (Jan. 23) 1943. Evans, R. S.: The Use of Concentrated Red Cells as a Substitute for Whole Blood, *J. A. M. A.* 122: 793 (July 17) 1943. Alt, H. L.: Red Cell Transfusions in the Treatment of Anemia, *J. A. M. A.* 122: 417 (June 12) 1943.

to human blood. Five per cent dextrose in distilled water produced a complete hemolysis of these cells in a very short time. Five per cent dextrose in saline solution frequently produced complete hemolysis. Two per cent dextrose and 2 per cent and 5 per cent sucrose produced the same changes as 5 per cent dextrose. Alsever's solution, containing 0.80 per cent sodium citrate, 2.05 per cent dextrose and 0.42 per cent saline solution gave as good results as Denstedt's solution, containing 1.7 per cent citrate and 2.3 per cent dextrose. These special mixtures were far superior to saline solutions in preserving the cells for a longer period of time, as indicated by in vitro studies (chart 1).

In the table the studies of cell fragility with these various solutions are shown. It is seen that saline diluted cells stood up very well until the fifth day, when the fragility index increased very rapidly. While the Alsever and Denstedt suspended preparations started with a slightly higher fragility index, this index remained at a constant level until the tenth or the fourteenth day. Mollison and Young¹ and Denstedt² have shown that the fragility index does not always parallel the life in vivo of these transfused human red cells. Nevertheless these fragility studies have aided

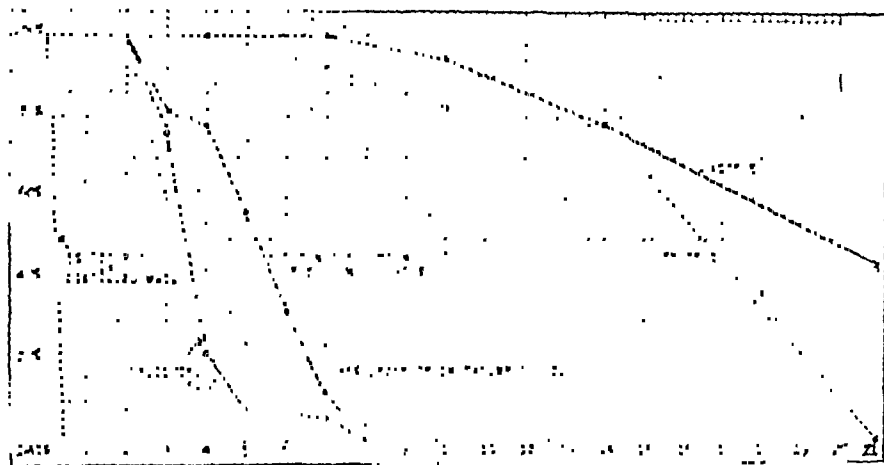


Chart 1.—Effect of various diluting solutions on hemolysis. Number of bottles (shown in percentages) which had supernatant fluid either "clear" or showing only a "trace" of hemolysis, by days from day of bleeding. All bottles had plasma withdrawn within twenty-four hours, and packed red cells were diluted within three or four hours after withdrawal of plasma. In the case of "undiluted" cells, hemolysis was tested by diluting with isotonic solution of sodium chloride, only on the day of testing. Each point on the graph represents observations on at least twelve bottles.

us in evaluating the various diluting solutions. We are now in the process of making studies of cell survival in vivo by the method of Ashby,¹ comparing saline diluted and Alsever diluted cells, and cells stored for various lengths of time.

When the amount of diluent added to packed cells was varied, so that its volume was one fourth of, one half

Effect of Various Diluting Solutions on Red Cell Fragility

Figures represent point of beginning hemolysis (in percentage of sodium chloride); each figure is an average of at least twelve tests.

Days.....	1	3	5	7	10	14	21
Saline solution diluted.....	0.40	0.49	0.50	0.67	0.72	....	....
Undiluted cells.....	0.48	0.52	0.68	0.71	0.76	....	....
5% dextrose in saline solution.....	0.52	0.56	0.63	0.72	0.76	....	....
5% sucrose in saline solution.....	0.51	0.50	0.57	0.58	0.62	....	0.74
.....	0.56	0.50	0.57	0.58	....	0.58	0.74

of or equal to the volume of cells, there was little apparent difference between the various preparations as measured by hemolysis and fragility studies. We have on several occasions pooled two or three bottles

of both diluted and undiluted cells of similar type and given them as one injection. We still prefer, however, to administer 500 cc. of saline suspended cells twice daily or three times daily when large amounts of blood are required. By this method ample blood can be administered quickly and the standard apparatus available in the various hospitals can be used with little change.

The number of reactions from red cell suspensions has been reported by other workers to be less than that of whole stored blood.⁵ In one hospital 413 separate resuspended cell transfusions were studied in 139 patients. Only a definite rigor followed by a rise of temperature was considered a reaction. In the 413 cell transfusions studied there were 9 definite reactions, a percentage of 2.1. These patients were also given whole bank blood at one time or another. When 342 bottles of stored whole blood were given to these same 139 patients, 12 reactions occurred, a percentage of 3.5. This would seem to suggest that there may well be a slightly lower percentage of reactions following saline suspended red cell transfusions than when stored whole blood is used. In another series of 629 saline suspended cell transfusions studied in three other

Detroit hospitals, reactions occurred in 3.0 per cent of the cases.

The red cell count and hemoglobin increase in 500 cc. of cell suspension administered was studied. A hemoglobin determination made by the Haden-Hauser method (16 Gm. of hemoglobin = 102 per cent) and a red cell count were taken approximately two hours before the cells were administered, and another hemoglobin and red cell determination was made twenty-four hours after the 500 cc. of cells was administered. These figures were averaged in 67 different cell transfusions given to 25 patients. The average hemoglobin rise from a transfusion of 500 cc. of suspended cells was 0.56 Gm. (3.75 per cent) and the average red cell rise was 206,700 cells. In the series of 629 saline suspended cell transfusions the hemoglobin rise varied from 0.46 Gm. in malignancy to 1.3 Gm. in obstetric cases to 500

cc. of cells administered. The red cells increase per bottle of cells administered varied from 123,157 in malignancy to 497,000 in obstetric cases.

As to the clinical improvement noted following cell transfusions, we can state that the results seem in every way similar to those from whole blood transfusions. Cell transfusions were not used in patients with significant hypoproteinemia, although, in a number of cases of debilitating illness with slight reduction in serum protein values, cell transfusions were used for economic reasons. The most significant and at times astonishing results from cell transfusions were seen in patients with severe anemia who were given 1,000 to 1,500 cc. of cells daily for two or three days. Several of these previously bedridden patients were able to walk around the ward after having received 2 or 3 liters of suspended cells in a period of two or three days.

We believe that much too often blood transfusions are given in quantities measured solely by the number of donors available; and not according to the need of patients for blood. When the storage areas in the

4. Ashby, W.: The Determination of the Length of Life of Transfused Blood Corpuscles in Man, *J. Exper. Med.* **29**: 267 (March) 1919.
5. Murray, C. K.; Hale, D. E., and Shaar, C. M.: Red Blood Cell Suspensions in Treatment of Anemia, *J. A. M. A.* **122**: 1065 (Aug. 14) 1943. MacQuaide and Mollison.³ Williams and Davis.³

body are depleted of red blood cells, it may take several transfusions to fill these depots and be reflected in a proper rise in circulating red blood cells. With an unlimited supply of salvaged red blood cells available, it should always be possible to prescribe the amount of blood or cells really needed by the patient. Further-

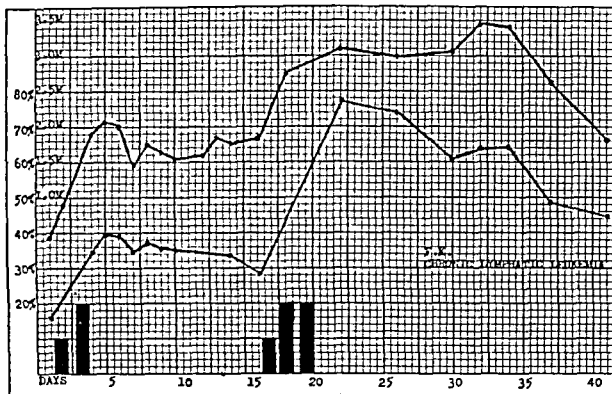


Chart 2.—Effect of red cell transfusions in a case of lymphatic leukemia. Upper line, red cell count; lower line, hemoglobin percentage.

more, recent studies have suggested that adequate amounts of blood given in a short period of time have a more beneficial and sparing effect on the bone marrow than the same total amount of blood when given over a period of several weeks.⁶

As has already been mentioned, red cell suspensions have not been used when pronounced hypoproteinemia is present. However, following acute blood loss of all kinds, in the later stages of burns and in numerous cases of debilitating illness, such as malignant conditions, tuberculosis, blood dyscrasias and severe chronic infection, red cell suspensions have proved of value. As would be expected, the number of reactions to cell transfusions in cases of blood dyscrasias, severe sepsis and malignant conditions is slightly higher and the hemoglobin and red cell count rise is slightly less than in patients with a simple acute or chronic blood loss.

In chart 2 is shown the hemoglobin (lower line) and red cell graph (upper line) of a patient with chronic leukemia with almost complete aplasia of the bone marrow. There were few platelets; the patient was bleeding from the gums and rectum and was orthopneic and unable to walk. His hemoglobin was too low to read accurately. Fifteen hundred cc. of suspended cells were given within eighteen hours, after which his bleeding ceased and he was able to walk about the ward freely. Several days later 2 more liters of suspended cells was given and he was discharged from the hospital. The very slow fall of his hemoglobin and red cell count over a period of twenty-six days without further transfusion is shown as an example of the prolonged beneficial effect of transfused cells under adverse conditions. In chart 3 is shown the graph of a patient aged 69 in a severe relapse from pernicious anemia who entered the hospital desperately ill with a lobar pneumonia of undetermined type. Two liters of suspended cells was given in thirty-six hours, together with sulfadiazine orally. Her blood picture was immediately restored to almost normal levels and was held there by the administration of liver extract. She made an uneventful recovery.

In the beginning of this work type specific cells were used, but as the project has expanded it was decided

to use only type O cells. In this way there is much less wastage of resuspended cells, and transcription errors are less likely to occur than when all types of cells are used.

The plan we are now using in the distribution of red cells at Detroit is as follows: On designated days a sufficient amount of blood is typed at the donor center to supply the number of bottles of O cells requested by the hospitals. This typing is done by two different technicians using two different preparations of high titer test serum and is done from the serology tubes only. The bottles of O blood thus obtained are individually and clearly designated with a special yellow tag. At the processing plant the routine procedure, including serology testing, is followed up to the point where the plasma is removed. As the bottles of O blood are collected in the plasma-removing room they are inspected for plasma cell ratio and color. After the plasma has been withdrawn, the cells are resuspended to their original volume in isotonic solution of sodium chloride. A sterile solid rubber stopper is inserted. The O cells thus prepared are delivered to the donor center on the day following their withdrawal from the donors. Each bottle still retains its original dated donor tag, as well as the special yellow O type tag. The red cell suspensions are transported in the portable refrigerators used by the Red Cross Blood Donor Service and on arrival from the laboratory are placed in our blood bank refrigerator. The following morning the bottles of cells are carefully removed and inspected for changes in color of both the supernatant liquid and cells as well as for mechanical defects. The bottles which pass inspection are then placed in special cardboard containers, and delivery is made to the participating hospitals. Most hospitals prefer delivery on Tuesdays, Thursdays and Saturdays, so that fresh cells are always available. For the small hospital, which may be only an occasional user, a few bottles are held at the donor center to be delivered as requested.

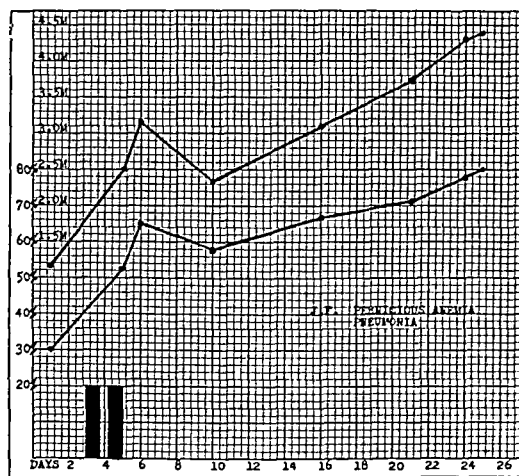


Chart 3.—Effect of red cell transfusions in a case of pernicious anemia with pneumonia. Upper line, red cell count; lower line, hemoglobin percentage.

The red cells used by the participating hospitals are furnished by the American Red Cross Blood Donor Service without charge, and no charge is made to any patient by the hospital except for the laboratory services of retyping and cross matching and for the use of administering equipment. The hospital assumes the full responsibility for the use of this

6. Doan, C. A.: Personal communication to the authors.

material. The laboratory technician in charge of receiving the cells from the Blood Donor Center is required to retype the cells and to cross match them with the recipient's blood. For this purpose suspended cells are obtained with a sterile pipet directly from the bottle just before administration. The technicians in all the participating hospitals are given mimeographed sheets of instructions as to the requirements of inspection for changes in color, and of adequate filtration, and as to the routine care of such stored blood. The cells must be filtered immediately before use through four layers of bandage gauze or must be given through a 100-200 mesh standard stainless steel blood filter placed in the administration set. Technicians are instructed to discard any bottle of cells which does not meet every specification. A simple report form is required to be filled out for each bottle of blood and returned to the Blood Donor Center.

A wartime program has provided this unusual opportunity to salvage the red cells remaining after withdrawal of the plasma from the blood that has been donated to the Army and Navy. It is probable that, with the extensive processing facilities now in existence for dried plasma and serum albumin and with a growing demand for such products, a continuation of this red cell salvage program may be possible, either through commercial plants or through community organizations.

SUMMARY

1. The cell residue obtained after centrifugation and removal of the plasma from serologically negative citrated blood collected at the American Red Cross Blood Donor Center in Detroit has been made available for use in the form of resuspended cell transfusions.

2. Isotonic, pyrogen free, sterile saline solution proved more satisfactory than a number of other solutions for preserving the centrifuged cells up to five days.

3. Careful aseptic technic preserved the sterility of the cells, as shown by controlled cultures at the beginning of the work and by the cultures of random samples at intervals thereafter. Any change to a dark red or violaceous color in the cells or supernatant fluid may indicate accidental contamination. If this occurred, or if for any other reason the appearance of the cells was questionable, they were discarded.

4. Rigid regulations as to retyping, cross matching, adequate filtration and time limitation were set up and adhered to by all users of the resuspended cells.

5. Nearly 10,000 bottles⁷ of resuspended cells were supplied to fourteen Detroit hospitals, and a careful follow-up study which was made of 4,050 of these cell transfusions showed very favorable clinical results.

6. The percentage of reactions was lower than that from whole blood transfusions in the same hospitals. The post-transfusion percentage of reactions from 413 saline suspended cell transfusions in 139 patients was 2.1, whereas from 342 transfusions of stored whole blood given to the same 139 patients it was 3.5.

7. The average hemoglobin and red cells rise in 500 cc. transfusion of suspended cells in 67 cases was 0.56 Gm. and 206,700 cells per cubic millimeter respectively.

8. Striking clinical improvement was noted in several severely anemic patients to whom a liter or more of suspended cells was given daily for several days.

9. Both type specific and type O cells were used at first, but later only type O cells were distributed. The

use of type O. resuspended cells is recommended to minimize transcription errors and to eliminate as far as possible any incompatibility reactions.

10. As in wartime, peacetime salvage of human blood cells would seem to be a logical sequel to the development of a plasma program.

RESUSCITATION OF THE DROWNED TODAY

FRANK C. EVE, M.D. (CAMB.), F.R.C.P. (LONDON)
HULL, ENGLAND

*In Seven Seas the victims drown;
Their cries for help imagination hears.*

A year ago our implicit faith in Schafer's almost sacrosanct method was shaken by Surgeon Commander Gibbens, who wrote that in the Royal Navy this method was rarely successful, although practiced by trained hands. The victim's chest felt to him "like putty," and ventilation of the lungs could not be effected. Doubtless this lack of response in bad drowning cases is due to lack of muscular tone, and this in turn is due to asphyxia of the nerve cells, situated between brain and spinal cord, which maintain tone and respiration. Now the main respiring agent is a thin sheet of muscle (the diaphragm) at the base of the lungs. In health this is pulled up into a dome by the elastic contraction of the lungs. When the diaphragm contracts, its dome is lowered and air is pulled into the chest. But when the diaphragm loses its tone progressively, as in drowning, it is pulled up by the elastic lungs into a position of extreme expiration. Schafer's method would then be useless, especially as it depends entirely on the elastic tone of muscles (no longer present) for inspiration when the pressure of the hands is taken off the patient's back. Schafer naturally assumed in 1908 that his method, which works well in normal conscious persons, would also work in the almost drowned, but this unfortunately is not true. What then are we to do about it?

In the first place we must not be hoodwinked by figures for the ventilation of the lungs derived from artificial respiration of conscious subjects. The only reliable imitations of a nearly drowned person are the newly dead cadaver and perhaps the deeply anesthetized person whose lungs have been overventilated to wash out carbon dioxide. In ventilation tests on the warm cadaver, Schafer's method yields only about 30 cc. (totally inadequate) and Silvester's method—of changing the size of the chest by extending the arms and then compressing the chest with them—yields 200 cc., which is probably just adequate. Two normal men anesthetized and their carbon dioxide washed out gave ventilations of 660 cc. for the Schafer method and 930 cc. for the Silvester method. Hence, of these two older methods which do not require apparatus, I would certainly start off with Silvester's method in a bad or pulseless case of drowning, though Schafer's method will probably succeed in milder cases. Silvester's face-upward method has the drawback that the flaccid tongue is liable to fall back and obstruct the airway, so that a second rescuer is needed to pull forward the tongue (or lax lower jaw). Schafer's technic is free from this objection, and mucus or water drains away better from the mouth in the prone position. Schafer's method is much improved if a

⁷ Since this paper was submitted for publication the number of transfusions given has increased to fifteen thousand

second operator (at the head end) lifts the extended elbows (and hence the chest) off the ground during inspiration (figs. 2 and 3). I read that this Nielsen modification had been adopted by the New York Emergency Service.

RESUSCITATION WITH BREATHING MACHINES

I can pass over the "iron lung," which is needed only in prolonged hospital cases of failure of respiration such as paralysis of the diaphragm by infantile paralysis or diphtheria. With the American partiality to machinery, there has been a remarkable vogue for various "suck and blow" machines for the drowned and in similar cases. In England they have not been favored. Professor Yandell Henderson strongly condemns them, but he still (in a recent letter) thinks

chair in the house so that the head-up and head-down posture could be alternated. Most fortunately they had a long rocking chair, to which a platform of folded blankets was added and the child tied on. Why not now alternate the tilt a dozen times a minute, so that the weight of the abdominal contents could push and

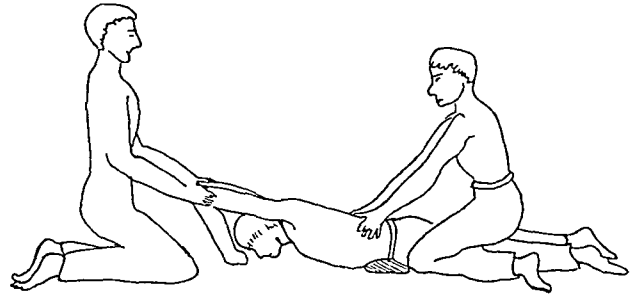


Fig. 2—Schafer-Nielsen method of resuscitation, inspiratory phase

pull the diaphragm up and down like a piston? This was done continuously by the devoted parents, completely relieving the child's breathing till the diaphragm paralysis passed off after two and a half days. She is still alive and healthy. In this interesting way I stumbled on a new method of resuscitation by rocking. With the expert aid of Dr. Esther M. Killick it was found (in the Leeds physiology laboratory) to be efficient, and at ten double rocks a minute with a tilt of 50 degrees to ventilate 600 cc. per rock (normal 500 cc.). This is ample ventilation: more would introduce the possible subtle dangers of acapnia (too little carbon dioxide in the blood).

ROCKING METHOD ADOPTED BY ROYAL NAVY

Faced by the failures of Schafer's method, Surgeon Commander Gibbens turned with relief to my rocking method, which worked by gravity and was independent of muscular tone. He adapted it to ships by fixing, under the middle of an ordinary stretcher, a pair of grooved wooden blocks to prevent slipping. On these it could be rocked 45 degrees each way, either on a trestle 34 inches high or on a loop of rope slung from the hammock hooks (fig. 1). The method has now (1943) been adopted preferentially in the navy and is fully described and illustrated in "First Aid in the Royal Navy," published at 2 shillings. Schafer's

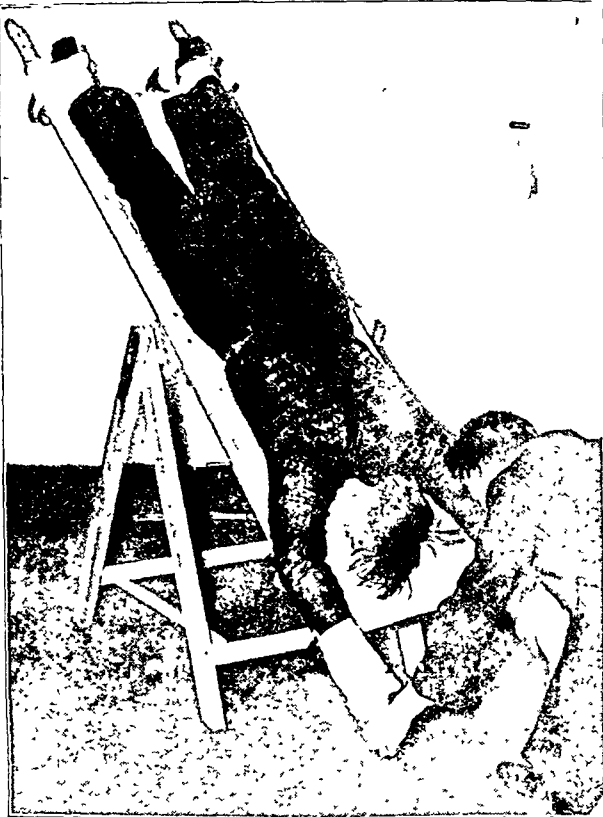


Fig. 1.—Rocking on a trestle. (Copyright by Surgeon Commander G. H. Gibbens, R. N. V. R., Fairlawn, Sidmouth, Devon, England)

Schafer's method adequate if aided by oxygen containing 6 to 10 per cent of carbon dioxide (seldom available for the drowned).

THE ROCKING METHOD

In 1932 I was called to a girl aged 2 years, propped up in bed, deathly pale and rapidly dying of the "death rattle" (mucus surging to and fro in the windpipe). I noticed that the diaphragm was not working, and inquiry elicited that the child had diphtheria six weeks previously but had been well till her breathing went wrong a few hours before my visit. In cases of "death rattle" I always tilt the patient so that the windpipe slopes downhill and the mucus drains into the throat, from which it can be swabbed. This tilt cured the death rattle in a few minutes, but I reflected that it would compress the lungs and thus conduce to pneumonia if continuous. I asked if they had a rocking

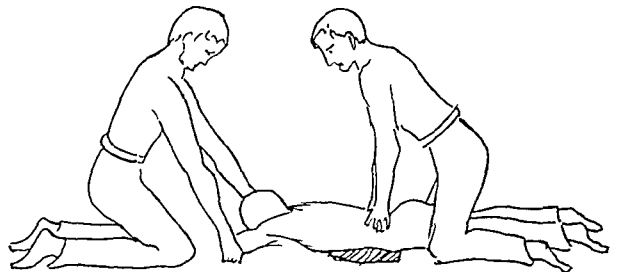


Fig. 3.—Schafer-Nielsen method, expiratory phase

method is used promptly and till rocking can actually begin. The patient is laid face downward and the ankles and wrists are lashed to the handles of the stretcher. The first head-down tilt of 45 degrees is maintained till no more water drains from stomach or lungs. After a few minutes a tilt of 30 degrees each way (ten times a minute) will be enough to ventilate the lungs. The advantages are that untrained operators

can work it instead of the relays of skilled operators needed by manual methods. It cannot injure ribs or viscera and is independent of muscular tone in blood vessels or diaphragm, in which respect unfortunately Schafer's method fails. Wet clothes can be removed during rocking and warmth applied.

In spite of many efforts I have not been able to get this method tested on the warm cadaver. But Dr. Macintosh, Nuffield professor of anesthetics at Oxford, has tried it out (1943) under deep anesthesia (in apnea) on Squadron Leader Pask, who was an anesthetist and realized that tests on conscious persons were useless. He nobly volunteered to be tested with proper recording instruments with ten double rocks per minute. The yields were Schafer 340 cc., Silvester 400 cc. and Eve 580 cc., with a tilt of 45 degrees each way. This experiment is considered to imitate the condition of a drowned man, but I doubt that tone in the diaphragm is completely lost.

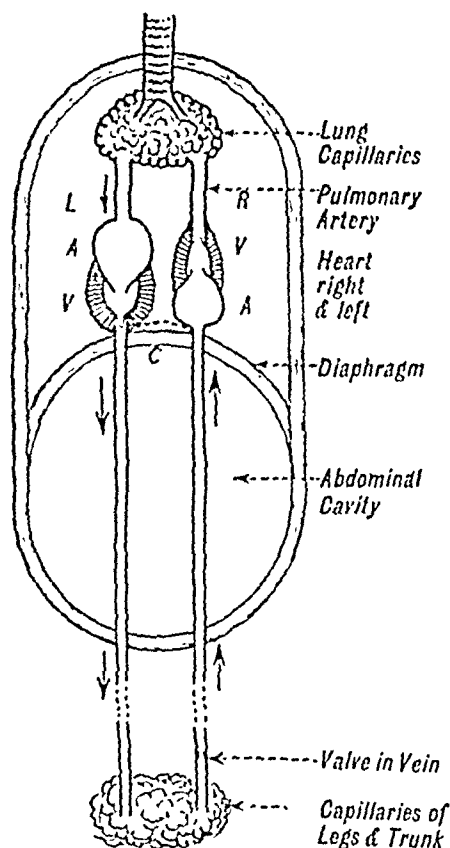


Fig. 4.—Diagrammatic representation of the circulation.

supported while the legs, arms and head hung limply. By swaying from their hips the two men rocked my 10 stone (63.5 Kg.) a dozen times a minute through about 40 degrees each way. Ventilation seemed adequate, for I did not need to breathe. They thought they could easily keep it up for a quarter of an hour or more. My modified Silvester method seems better still (not yet published). These manual methods have not been tried out but would be a long way better than nothing. Ashore a two-wheel builder's hand cart would serve for rocking, the victim's legs being lashed to the (abbreviated) pole handle. It could also carry blankets, macintoshes and life buoy to organized bathing places.

THE THREE ESSENTIALS OF RESUSCITATION

The term artificial respiration seems dangerously misleading because it focuses attention on ventilating the lungs. I submit that resuscitation is actually a trinity of ventilation, circulation and warmth directed to supplying warm blood, oxygenated by moving lungs, to the microscopic nerve cells which maintain respira-

tion and tone. These are situated where brain and spinal cord unite and can (I found) be paralyzed by cold and quickly revived by warmth. To illustrate what happens, Dr. H. W. Haggard was at hand to do artificial respiration when a man had a sudden fatal heart attack. He found he could ventilate the lungs normally at first, but after ten to fifteen minutes this became impossible. The nerve cells which maintain tone of the diaphragm had died of asphyxia and the elasticity of the lungs had drawn up the flaccid diaphragm into full expiration. Similarly in the apparently drowned, if too long unsuccored, the nerve cells will die of asphyxia, and then all hope is gone. Till then they may be revived by artificial respiration, seldom successful after trying for an hour, though rarely up to eight hours. The heart dies more slowly than the nerve cells, for after drowning the human heart has been revived by perfusing oxygenated saline solution, a baby's heart after several hours.

RESTORATION OF CIRCULATION

Probably in the future the merits of rival methods of resuscitation will be judged more by their effects on the circulation than on ventilation, which is so much easier to produce and to measure. For air in the lungs is useless unless the oxygenated blood is conveyed to the dying nerve cells. Up till now the effects of artificial respiration on the circulation have been crudely guessed from the alterations it produces in the pressures inside the heart of the newly dead man. Silvester's method, which opens up the ribs and then presses them tightly shut again, produces a pressure change of 26 cm. (of water) inside the dead heart: the Schafer method yields only 4 cm., increased to 22 cm. by the Nielsen modification. (The corresponding figures for ventilation are 280, 20 and 210 cc.) These (larger) pressure changes should help to restart the heart. It may be argued that Schafer's method should help by squeezing blood into the heart from the great veins in the abdomen. But it has been found (1939) in the Banting Institute, Toronto, that in drowned dogs (after artificial respiration and death) the venous side of the heart is overfull and the arterial side too empty. Bleeding was useless: amyl nitrite and carbon dioxide-oxygen mixture were helpful. Thus the apparent gain by the Schafer method seems likely to prove a disadvantage. The problem seems to be how to get the blood past the collapsed lungs and right side of the heart.

THE ROCKING METHOD AND THE CIRCULATION

To clear my own ideas I have found the diagram (shown in figure 4) most helpful and instructive. Since gravity in rocking affects only the longitudinal blood vessels, they can be represented as straight tubes: the arms and head (for clarity) can be omitted as they counterpart the legs and trunk: the tangled confusion of the heart can be simplified into two rubber syringes. Observe the one-way valves in the veins and heart, and particularly the broken line C. This indicates the coronary artery which carries oxygenated blood from the main artery through the actual muscles of the heart and so to join the blood flowing back into the lungs. If now we tilt the diagram (or the patient whose heart has stopped or nearly so) into the head-down tilt we see that the pressure of about 4 feet of blood in the arteries will slam shut the main (aortic) heart valve and have no option but to travel through the oxygen starved heart muscle. This should be invaluable in starting a stopped heart or restoring

a feeble one. Similarly the nerve cells of the brain and breathing center will receive blood rhythmically at a hydrostatic pressure which I calculate will be fully normal. The veins of the extended arms will acquire a reservoir of blood ready to fill the heart again when the legs are tilted down. Every drowning person is shocked, and in shock the venous side of the heart is said to be always starved of blood. In that case the head-down tilt will fill it and encourage it to beat and pump. That is why in shock we raise the foot of the bed: an empty heart pump evidently cannot work.

Now tilt the diagram (or patient) feet down. Blood falls from the lungs past the open valves of the left side of the heart into the arteries of the trunk and legs. Hence, in rocking, gravity propels the blood alternately in arteries and veins in the direction of the arrows; reflux is prevented by valves in the veins and heart. My faith that this will happen is confirmed by Sir Leonard Hill, the English physiologist, whose experiments (he writes me) showed that blood flow to the brain can be kept going by head-up and head-down positions alternated. For this and other reasons he considers my rocking method the best way of doing artificial respiration.

WARMTH

In victims of drowning the production of heat is minimal and the loss of heat maximal, especially from evaporation in a wind. Heat loss is visible only to the eye of the imagination and hence is often forgotten. Remembering that the revival of chilled nerve cells is our goal, I suggest hot bottles saddle bagged over the neck, or an electric shock cradle tied to the head end of the rocking stretcher. I read that a rigid corpse-like fakir was quickly brought to life, after being for ten days actually buried alive, simply by pouring hot water abundantly, chiefly over the head, neck and heart.

This seems worth trying for the drowned, who are already wet. Carbon dioxide is greatly used in resuscitation, as (normally) it is a splendid stimulant of the respiratory nerve cells when mixed 5 per cent with oxygen and inhaled. Yet Professor Macintosh tells me that he and several American anesthetists have recently abandoned its use because it is a dangerous depressant to the nerve cells of those at the point of death.

CONCLUSIONS

Resuscitation of the drowned is not merely working the bellows of the lungs but a fight to revive cold asphyxiated nerve cells by a circulation of warm blood oxygenated by moving lungs. Our old comfortable confidence in Schafer's method has been roughly shaken: Silvester's method is in many ways better, and the recent rocking method seems more promising still. Uncomplacently we must all "go to school" again. More experiments are badly needed: resuscitation is in the melting pot.

81 Beverley Road.

Estimating the Standing and Capability of a Man of Science.—There is only one sound criterion for estimating the standing and capability of a man of science, and that is the evaluation of the way in which he is regarded by his colleagues in his profession. If there were only one way of doing this, perhaps it might not suffice, but there are many. Membership in scientific societies of standing is important, wherever such membership is dependent on evaluation and election. Recognition by learned bodies is a guide.—Bush, Vannevar: *The Kilgore Bill, Science*, Dec. 31, 1943, p. 571.

CONCENTRATION RADIOTHERAPY OF CANCER OF THE LARYNX

A STUDY OF 413 CASES

MAX CUTLER, M.D.

CHICAGO

This is a report of 413 consecutive cases of cancer of the larynx observed by me between January 1931 and January 1943. The main purpose is to discuss the advances in the radiation therapy of laryngeal cancer with special reference to concentration radiotherapy and to analyze its bearing on the present day treatment of this disease.

It has been customary to separate cancer of the larynx into two main forms: extrinsic and intrinsic. There is, however, some confusion as to the exact definition of these terms, since they are used in the literature with different meanings depending on whether the particular classification is surgical or anatomic. According to the surgical classification, extrinsic carcinoma includes those arising from the aryepiglottic folds, pyriform fossae and postcricoid region as well as lesions arising within the laryngeal cavity which have spread outside the boundaries of the larynx. Obviously, lesions arising in the aryepiglottic folds, pyriform fossae and postcricoid region are not true laryngeal tumors but are lesions of the hypopharynx. The surgical classification found its justification in the fact that extrinsic carcinomas by definition are beyond surgical approach, whereas the intrinsic forms are considered operable. The anatomic classification refers to the primary site of origin of a lesion regardless of its subsequent extension. Thus, all tumors which arise within the larynx, regardless of their extension to the pharynx, remain by definition intrinsic. Because of this confusion and because many extrinsic carcinomas are actually carcinomas of the hypopharynx and not of the larynx, there are advantages in discussing carcinomas of the larynx with reference to their site of origin regardless of their subsequent extension. The classification used in this study is anatomic and histogenetic.

At birth the mucous membrane of the larynx, with the exception of the lingual surface of the epiglottis and the free borders of the vocal cords, is largely covered by cylindric epithelium. With increasing age, pavement epithelium gradually replaces the cylindric epithelium by a process of normal metaplasia. Pavement epithelium thus covers the borders of the epiglottis, the aryepiglottic folds and at times the false cords. The true cords remain covered by pavement epithelium throughout. Those sites in which the cylindric epithelium has been more abundant frequently give rise to tumors which are composed of cylindric nonepidermoid elements. Thus, in carcinoma of the false cords or the ventricular cavity the histologic type tends to be of a less hornifying variety and is usually composed of more undifferentiated nonepidermoid cells. In the true vocal cords, where pavement epithelium predominates, the type of epithelium is with rare exceptions that of epidermoid structure, and carcinomas in this region resemble the carcinomas of the cutaneous tissue and of the buccal cavity. These histogenetic factors have some bearing on the rate of growth and the type of lymphatic involvement as well as on the radio-sensitivity of the carcinomas arising at the various sites.

From the Chicago Tumor Institute and the Hines Veterans Facility, Hines, Ill., aided by a grant from the National Cancer Institute.

CLASSIFICATION¹

1. *Carcinoma of the Laryngeal Vestibule*.—This group includes two subvarieties: (a) carcinoma of the free borders and laryngeal surface of the epiglottis and (b) carcinoma of the false cords. The two varieties are discussed under the general term vestibular carcinoma because they are almost always involved together.

(a) Carcinoma of the free borders and laryngeal surface of the epiglottis generally produces a bulky ulcerated tumor which may grow to fill the entire

TABLE 1.—Classification of Cases According to Site of Origin

Type	No. of Cases	Per Cent
Vestibule (false cord and epiglottis)....	193	47
Ventricular cavity.....	26	6
True vocal cord.....	184	45
Subglottis.....	4	1
Origin undetermined.....	6	1
Total.....	413	100

laryngeal vestibule. The epiglottis itself may be partially destroyed. Anterior extension may result in tumefaction of the soft parts between the hyoid bone and the superior border of the thyroid cartilage. A second form of epiglottic carcinoma appears as a smooth, rounded, domelike swelling of the laryngeal surface of

the cord and extends anteriorly. Further extension anteriorly occurs either in the form of a thin layer of carcinoma extending along the superior and free borders of the cord or by an ulcerated destructive invasion of the cord itself. Extension then occurs to the anterior commissure and across the midline to the opposite cord. As the lesion extends posteriorly it involves the rich lymphatics in that site, which results in more rapid spread to the subglottic area, false cords, ventricle and aryepiglottic folds. In the beginning the clinical course is very slow.

4. *Carcinoma of the Subglottic Area*.—This type is probably more common than has been generally supposed. Many subglottic carcinomas have been regarded as downward extensions of carcinomas arising in the true cords. In this study only 4 cases have been identified, but it is probable that the incidence is considerably higher. Tomograms should prove of help in identifying this type. Subglottic lesions spread upward to involve the undersurface of the true cord and extend in all directions, involving adjacent cartilage. Since these lesions originate in a silent area, they do not give rise to early symptoms. Biopsy is difficult, and several attempts may fail to yield a positive diagnosis. The disease is nearly always more extensive than clinical examination discloses.

TABLE 2.—Age Incidence

Type	No. of Cases	Range of Ages	Average Age	Age Groups							
				10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Vestibule (false cord and epiglottis)....	193	32-78	52.1	0	0	11	77	65	32	8	0
Ventricular cavity.....	26	33-65	47	0	0	3	16	5	1	1	0
True vocal cord.....	184	19-81	52.7	1	1	8	77	51	33	9	4
Subglottis.....	4	19-65	51.7	0	0	0	7	1	1	0	0
Origin undetermined.....	6	42-50	46.5	0	0	0	5	1	0	0	0
Total.....	413	19-81	52.2	1	1	22	177	123	67	18	4

the epiglottis projecting into the vestibule. Ulceration may not be visible until late. A third type of epiglottic carcinoma arises from the free border of the epiglottis and spreads anteriorly into the vallecula.

(b) Carcinoma arising from the false cords tends to remain confined to the supraglottic region and often extends to the preepiglottic space. Extension to the true vocal cords results in intermittent hoarseness.

Carcinoma of the laryngeal vestibule has a tendency to grow rapidly and extend widely both by direct invasion and by lymphatic spread. This form is generally composed of undifferentiated cells and is comparatively radiosensitive.

2. *Carcinoma of the Ventricular Cavity*.—These tumors grow silently within the ventricular cavity without producing symptoms or signs over long periods. A sudden attack of dyspnea may be the first indication of disease. Laryngeal examination may disclose only a smooth elevation of the ventricular band without ulceration. When the lesion projects into the laryngeal lumen, biopsy of the papillary projections may be made without difficulty; however, when the tumor does not project into the laryngeal lumen biopsy is exceedingly difficult and often gives repeatedly negative results. The cells are generally undifferentiated, with a tendency to widespread invasion.

3. *Carcinoma of the True Vocal Cords*.—This type composes the majority of endolaryngeal tumors. The lesion begins in the midportion of the free border of

Table 1 shows the classification of the cases.

Stage of Disease: In 26 per cent of the 413 cases cervical adenopathy was present on admission to the hospital. The incidence of adenopathy in the different types was as follows: true vocal cords 7 per cent, ventricular cavity 19 per cent and vestibule (false cord and epiglottis) 45 per cent. Of 167 cases of carcinoma of the true cords in which the mobility of the cords was noted the cords were freely movable in 26 per cent, partly fixed in 26 per cent and completely fixed in 48 per cent. Of the 193 cases of vestibular carcinoma, 45 per cent were accompanied by cervical adenopathy.

Age: The average age among 413 patients was 52.2 years. The youngest was 19 years, the oldest 81 years.

Table 2 shows the age incidence according to decades. Symptoms: Dyspnea, pain, dysphagia and hemorrhage characterize lesions arising in the epiglottis. Intermittent hoarseness is a common symptom in lesions of the false cord and is generally due to pressure of the growth on the true cord rather than to invasion of this structure. The most striking symptom of carcinoma of the false cords is dyspnea. Dysphagia occurs when the lesion extends posteriorly and involves the pyriform fossa. A sudden attack of dyspnea in the absence of any previous warning may be the first indication of a carcinoma arising in the ventricular cavity.

Hoarseness is by far the most important and most common symptom of carcinoma of the true vocal cords. It occurred in 95 per cent of 185 cases in this series. Hoarseness occurs earlier when the lesions arise anteriorly and on the free margin of the cords. Pain

1. This classification is based on the one used in the Curie Institute of Paris.

and dyspnea are late symptoms. Table 3 shows the incidence and average duration of symptoms in the different forms of laryngeal cancer.

Biopsy: Biopsy was performed routinely in all cases of suspected laryngeal cancer. No effort was made to grade the specimens, although the microscopic examination included an estimate of the degree of cellular differentiation and anaplasia.

RELATION BETWEEN MICROSCOPIC STRUCTURE, PROGNOSIS AND RADIOSENSITIVITY

A radiosensitive tumor may be defined as one which can be completely sterilized without radionecrosis of the surrounding normal tissues. Since the property of radiosensitivity is a matter of degree and is intimately related to the efficiency of the treatment, it is impossible to draw a fine line of division between radiosensitive and radioresistant tumors.

The radiosensitivity of a tumor is intimately related to numerous factors: histogenetic, histologic, gross anatomic and constitutional. The underlying biologic phenomena are not at all understood. Clinical and pathologic experience emphasizes the inadequacy of microscopic structure alone in predicting radiosensitivity. The ultimate criterion and only absolute test of

treated by irradiation. Experience supports this view. It is my belief that when done by a pathologist especially experienced and skilled in this field, histologic grading has a value, but it must be interpreted broadly in relation to the clinical picture and in the light of modern radiation therapy.

The view that the presence of adult squamous keratinizing features in the biopsy indicates radioresistance has become entrenched in the literature on laryngeal cancer. This statement is usually followed by the deduction that such lesions, being radioresistant, should be treated by surgical intervention and not by radiation therapy. One obvious source of error is that a biopsy is frequently not a reliable index of the exact histologic composition of the lesion; thus, when a pathologist submits a diagnosis of squamous carcinoma from examination of a small fragment of tissue on a single biopsy he bases his report on the presence of adult, differentiated squamous features in the specimen submitted to him. If he had more tissue available, he might find undifferentiated elements or even a preponderance of such elements. In other words, the usual biopsy of a lesion in the larynx is wholly inadequate to permit an accurate estimate of the degree of differentiation. Multiple biopsies help to overcome this

TABLE 3.—Incidence and Average Duration of Symptoms on Admission

Type	No. of Cases	Percentage of Patients with							Average Duration of Symptoms (Months)
		Hoarseness	Pain	Dysphagia	Dyspnea	Cough	Bleeding	Weight Loss	
Vestibule (false cord and epiglottis).....	193	72	44.5	35.5	18	26.5	20	43.5	12.3
Ventricular cavity.....	26	92	24	20	24	8	8	44	16.8
True cord.....	184	95	20	12.5	13	12	9.2	27	18.6
Subglottis.....	4	75	0	25	50	25	25	50	26.2
Origin undetermined.....	6	50	0	16.5	33	0	16.5	50	20
Total.....	413	83.5	21.5	24	16.5	18.5	14.5	26	15.6

radiosensitivity of a tumor is its clinical behavior under treatment. Because of numerous exceptions, it is hazardous to apply general rules to specific instances.

Many pathologists and surgeons believe that there is a relation between the degree of anaplasia and the results after surgical intervention in cases of cancer of the larynx, and some clinicians are influenced by the histologic grading in deciding between surgical operation and irradiation for certain operable intrinsic carcinomas of the larynx. The relation between the microscopic structure in the biopsy and radiosensitivity is even more complicated and is also highly controversial. The view that the histologic structure is of minor importance and of limited value in estimating radiosensitivity and determining the type of treatment is shared by numerous writers (Kriegsmann,² Harris and Klemperer³ and others).

It has been noted that when the cells are uniformly small and undifferentiated, especially when they exhibit a convoluted plexiform arrangement, the lesion is usually relatively radiosensitive, even though one finds interspersed islands of adult differentiated squamous elements with pearl formation. This microscopic structure is often found in lesions originating in the false cords and epiglottis. I am not certain whether this histologic type ever originates in the true vocal cords. This structure is usually classified as grade 3 or 4 and interpreted as being more malignant and hence better

difficulty but do not solve it completely. Another obvious source of error relates to the treatment.

In view of the steady increase in the effectiveness of irradiation, it is obvious that the terms radiosensitive and radioresistant, expressing relative qualities, must alter their meaning. Lesions that were radioresistant to the old type of irradiation used many years ago are radiosensitive to the methods used today. Thus, the conception that adult keratinizing squamous carcinoma of the larynx is radioresistant and hence not curable by irradiation is no longer tenable. Schinz and Zuppinger⁴ in 1937 reported favorable results of irradiation in 25 cases of adult squamous carcinoma of the larynx, and the observations now presented leave no doubt on this question. The experience described permits the definite conclusion that adult squamous carcinoma is not radioresistant to adequate external irradiation and is curable by adequate radiation therapy without radiation necrosis, provided the cords are not completely fixed.

Treatment.—Table 4 shows the disposition of the 413 cases of laryngeal cancer. Under the heading "inadequate irradiation" are included cases in which a full course of irradiation was not administered for one or more of the following reasons: (a) poor general condition, (b) advanced disease, (c) intercurrent disease resulting in interruption or cessation of treatment and (d) treatment before 1938 by technics which, according to present standards, must be regarded as having been wholly inadequate.

2. Kriegsmann: Demonstration von röntgenbestrahlten Kehlkopfkarcinomen, Hals-, Nasen- u. Ohrenarzt (pt. 2) 44: 242, 1937.

3. Harris, William, and Klemperer, Paul: Pathologic Differentiation between Radiosensitive and Nonradiosensitive Malignant Neoplasms of the Larynx. Arch. Otolaryng. 28: 335 (Sept.) 1938.

4. Schinz, H. R., and Zuppinger, A.: Siebzehn Jahre Strahlentherapie der Krebse, Leipzig, Georg Thieme, 1937.

PROGRESS IN RADIOTHERAPY

The divided dose technic, generally known as the Coutard method,⁵ or some modification of it is the most prevalent form of roentgen treatment now in use. So much confusion surrounds the use of the term "Coutard method" that an effort to clarify it may be desirable. First, it should be pointed out that Coutard has never adhered to a rigid technic or to a single principle of treatment. The technic to which the term "Coutard method" is generally applied is based on the use of moderate daily doses of roentgen rays until a pronounced reaction in the mucous membrane and skin is produced. Decided variations in daily and total doses and in intensity of the reactions are included in technics described as the "Coutard method." After using a treatment time of thirteen to sixteen days for several years, Coutard prolonged the time first to eighteen days, then to twenty days and finally to twenty-five days, using daily doses of 400 and 300 roentgens. Several years later he prolonged the time still further to thirty, forty and fifty days, with a corresponding reduction in the daily dose to 250, 200 and 150 roentgens. In addition to varying

of treatment is eighteen days. In selected cases the treatment is given in two cycles.

Voltage.—Experience with the use of voltages higher than 200 kilovolts (400,000 to 1,000,000) is gradually accumulating, and certain advantages of higher voltage have been observed and recorded; but, so far as I know, there is no published report of a comparison between the use of 200 kilovolt roentgen rays and the use of higher voltages based on comparative clinical studies in which voltage has been the only variable factor. Not until such studies are available will it be possible to draw definite conclusions. Studies of this type are under way. In the meantime, 400 kilovolt x-rays are preferred, and this voltage was used in these observations.

Roentgen Intensity.—In the development of the new technic, intensities varying from 3 to 10 roentgens per minute have been used. Serious injury to the connective tissue and blood vessels has been avoided, and it is probable that the use of low intensities has been an important factor in safeguarding the normal structures. It would probably be unsafe to use this technic with high roentgen intensities.

TABLE 4.—Methods of Treatment

Type	No. of Cases	Radiation Only		Radiation Followed by Laryngectomy	Radiation Followed by Other Surgical Procedures *	Laryngectomy	Other Surgical Procedures *	Very Advanced Symptomatic Treatment Only	Refused or Abandoned Treatment	Treated Elsewhere Prior to Admission
		Adequate	Inadequate							
Vestibule (false cord and epiglottis)										
Without adenopathy.....	106	46	34	5	0	0	1	2	5	13
With adenopathy.....	87	27	23	1	1	0	0	11	1	13
Ventricular cavity										
Partly fixed.....	4	3	1	0	0	0	0	0	0	0
Completely fixed.....	22	12	6	0	0	2	0	1	0	2
True cord										
Movable.....	44	30	6	1	1	1	1	0	2	3
Partly fixed.....	42	20	3	4	1	3	1	3	3	4
Completely fixed.....	80	20	8	0	0	28	3	1	4	10
Movability undetermined.....	18	0	0	0	0	0	0	0	0	18
Subglottis.....	4	2	0	0	0	0	1	0	0	1
Origin undetermined.....	6	0	0	0	0	0	0	0	0	6
Total.....	413	170	79	17	3	34	7	18	15	70

* Hemilaryngectomy, laryngofissure or dissection of cervical lymph nodes.

the total treatment time and the daily dose, Coutard has explored various other methods, including preparatory treatment, supplementary treatment, periodicity and treatment of the tumor bed with protection of the tumor. It is obvious, therefore, that the use of the term "Coutard method" without specifications is indefinite and misleading.

Since 1938 efforts have been under way in the Chicago Tumor Institute and the Hines Veterans Facility to extend the effectiveness of external irradiation to the more radioresistant lesions which had failed to respond to the former methods of roentgen and radium therapy.

THE METHOD OF CONCENTRATION

One principle of irradiation soon arrested attention. The new method was called concentration radiotherapy. The principles and technic were described in 1941.⁶ The basis of this technic is the use of large daily doses over a comparatively short period (nine to twelve days) and a total dose sufficient to produce an "epithelium" and usually also an "epidermite." In one series of cases the daily dose is increased as the size of the port is diminished. For advanced extrinsic lesions the period

Fields.—In the treatment of cancer of the larynx, one or two fields may be used. As a rule, the peripheral portions of a lesion are more radiosensitive than the central portion, at or near the point of origin. Many carcinomas regress under external irradiation and leave a central unsterilized resistant remnant, which under some circumstances is best treated with a sharp, intensive irradiation by the interstitial method. Based on the belief that the central portion of a carcinoma is more resistant and therefore requires more intensive irradiation, a technic has been developed in which the size of the field is gradually reduced as the daily dose is gradually increased. If the supposition is correct that the periphery of a tumor is more sensitive than its center, this technic permits a more efficient distribution of the irradiation. Radiation energy, which is so often wasted on the normal tissues in the periphery of a tumor, is conserved by means of this technic for the treatment of the central, more resistant, portion, which is generally the site of recurrence. At the same time the normal structures are protected from unnecessary injury. This technic is especially suited for lesions which are small and comparatively radioresistant. In the treatment of intrinsic cancer of the larynx, I generally begin with a field of 48 square centimeters. This is reduced gradually to 12 and sometimes to 6 square centimeters. Great

5. Coutard, Henri: Roentgen Therapy of Epitheliomas of Tonsillar Region, Hypopharynx and Larynx from 1920 to 1926, *Am. J. Roentgenol.* 28: 313, 1932.

6. Cutler, Max: Concentration Method of Radiotherapy for Cancer of the Mouth, Pharynx and Larynx, *J. A. M. A.* 117: 1607 (Nov. 8) 1941.

precision is necessary with the use of such small fields. The apparatus is provided with a device for centering the rays and a diaphragm; these permit accurate localization. Great care must be taken in the immobilization of the patient, and the field must be checked during the treatment.

Time (total treatment days).—For many years efforts have been made to determine the optimal time over which a given cancer should be irradiated. Regaud's original experiments with rams led him to suggest a total period of twenty to twenty-five days, but his later experiments suggested a treatment time of ten days. One highly important fact emerges from this experience in radiation therapy—namely, that within certain still undefined limits the more radioresistant the lesion is, the shorter must be the treatment time and the larger the daily dose. A superficial papillary carcinoma of the true cord, for example, can be sterilized with 6,000 roentgens given in small daily doses over a period of forty to fifty days. A carcinoma of the true cord which has infiltrated the underlying muscle and caused a partial or complete fixation of this structure as a rule cannot be sterilized by this method, but in a certain proportion of cases such a carcinoma can be sterilized when 6,000 roentgens is given over a period of twelve days or less. It seems as if the more radioresistant lesions require not only an adequate total dose but an adequate daily dose. In other words, an adequate total dose distributed over a period of such length that the daily dose falls below a certain level fails to sterilize the more radioresistant carcinomas. Different total treatment periods, varying between four and eighteen days, are being tested. The treatments are given twice daily and on consecutive days. The optimal period has not yet been determined.

Daily and Total Doses.—One of the questions that arises with regard to dosage is whether the more radiosensitive forms of cancer should be treated with smaller total doses than the more resistant types. According to my experience, generally speaking it is hazardous to administer less intensive treatment to a supposedly more sensitive lesion. There are exceptions to this rule. It seems safer to treat all lesions on the assumption that they belong to the more radioresistant variety. Thus one approaches the irradiation of a cancer on the basis of the maximum treatment that can be safely tolerated by the patient and by the normal tissues surrounding the growth.

Telecurietherapy (10 Gm. radium bomb).—The apparatus for telecurietherapy contains 10 Gm. of radium and is used at a distance of 12.5 cm. The ports vary from 10 cm. in diameter to 4 square centimeters. An effort is under way to determine the comparative value of telecurietherapy and roentgen therapy. All factors that can possibly be controlled are made comparable, so that the principal variable factor is the quality of the rays. Lesions of the mouth, pharynx and larynx are selected for their similarity as to site of origin, extent of disease and structure. Such comparable lesions are treated by the two methods in order to determine the comparative results. All that can be said at this time is that telecurietherapy is a highly useful method of irradiation and some interesting results have been obtained, especially since the "method of concentration" has been employed.

Thirteen patients with carcinoma of the true cord in which the cord was not completely fixed were treated with telecurietherapy; 11 of them are free from disease.

Lederman and Mill⁷ have reported 15 cases of carcinoma of the larynx treated with telecurietherapy and observed for five years after treatment; 7 of the patients are alive and well.

Present Technic.—After tests of numerous variations in the technic of external irradiation using the principle of concentration, several methods have crystallized which seem to be the most effective so far. Each technic is applicable to a certain type of laryngeal cancer as regards location and extent. These technics are in no way considered as final but are presented as one stage in the progress of these studies. Each of the three technics will be illustrated by a case report.

1. Roentgen therapy, 400 kilovolts, eleven consecutive treatment days, single field, increasing dose, diminishing port, total dose 5,700 roentgens:⁸ This technic is used for carcinoma of the true cord or early carcinoma of the false cord. The following case presents the details:

CASE 1.—A man aged 38 presented an ulcerated lesion occupying the left true cord, touching the anterior commissure and almost reaching the posterior commissure. The lesion was bulky and extended into the ventricle of the larynx, onto the left false cord and subglottically. The left hemilarynx was almost completely fixed; the left arytenoid was partly fixed. The right hemilarynx was normal. Biopsy showed the growth to be a squamous carcinoma. He was given roentgen treatment from June 15 to June 26, 1942, with the following factors: 400 kilovolts, 5 milliamperes, filtration 5 mm. of copper, distance 84 to 115 cm., single left lateral port 5 by 5 cm. gradually diminished to 3 by 3 cm., intensity 4 to 3.3 roentgens per minute. Two equal treatments were given daily beginning with 100 roentgens twice a day and increasing to 425 roentgens twice a day, a total dose of 5,400 roentgens, measured on the skin.⁹ After a twelve day interval the following supplementary treatment was given to the opposite side of the larynx: 500 roentgens twice daily for two days through a 3 by 3 cm. port (dose 2,000 roentgens, grand total 7,400 roentgens). The patient acquired epithelitis and epidermite. The lesion disappeared slowly, no longer being visible five weeks after the end of the main cycle of irradiation. There was no evidence of disease eighteen months after treatment; the voice was normal, and the larynx had a normal appearance. The lesion was much too advanced for laryngofissure and would have required total laryngectomy, a procedure that had been advised by several laryngologists. The patient was a lawyer and public speaker; he was psychologically unsuitable for laryngectomy and, in fact, had refused this procedure.

2. Roentgen therapy, 400 kilovolts, interrupted method, ten treatment days, two fields, increasing doses, diminishing ports, dose 7,700 roentgens:¹⁰ This technic is used in treatment of more advanced intrinsic carcinomas of the larynx in which the advantages of the therapeutic test are desired. In case of certain operable intrinsic lesions this method of interrupted treatment generally permits one to estimate the probable radio-sensitivity of the lesion before the second phase of the irradiation is given. In this manner the second cycle can be omitted if the lesion appears to be relatively radioresistant and one can resort to laryngectomy. The following case presents the application of the technic:

CASE 2.—A man aged 43 had experienced continuous and increasing hoarseness for one year and pain on swallowing for three months. On examination it was found that the right true and false cords were the seat of a large ulcerated mass projecting into the lumen of the larynx, with almost

7. Lederman, M., and Mill, W. A.: The Telradium Treatment of Intrinsic Cancer of the Larynx, *J. Laryng. & Otol.* 57:471, 1942.

8. In some instances an additional dose of 2,000 roentgens has been given to the opposite side about two weeks after the end of the series, as in the case reported here.

9. The dose now used is 5,700 roentgens.

10. A third cycle consisting of 2,000 roentgens in two days is sometimes added, as in the case reported here.

complete fixation of the right hemilarynx. The biopsy showed squamous carcinoma. For six days (Feb. 24 to March 1, 1941) the patient received two roentgen treatments daily with the following factors: 400 kilovolts, 5 mm. copper filter, 85 cm. distance, 5 milliamperes, ports 30 to 20 square centimeters. The doses were first day 400 roentgens, second day 500 roentgens, third day 550 roentgens, fourth day 650 roentgens, fifth day 700 roentgens and sixth day 800 roentgens, a total dose of 3,600 roentgens, measured on the skin. Roentgen intensities varied between 6.3 and 8.9 roentgens per minute. The first cycle of treatment was given over the right side of the larynx. On March 12, eleven days after completion of the first cycle, the lesion showed the first sign of regression and there was more mobility of the right hemilarynx. Two days later, the thirteenth day after the last treatment, there was noted further regression and increased mobility.

Because of this pronounced improvement, it was decided to administer the second cycle of irradiation. The interval between the two cycles was twelve days. The second cycle began on March 14 and ended on March 17, with the following factors: 400 kilovolts, filter 5 mm. of copper, 85 cm. distance, 5 milliamperes, ports 30 to 12 square centimeters. The doses were: first day 850 roentgens, second day 950 roentgens, third day 1,050 roentgens and fourth day 1,150 roentgens, with two treatments daily, a total dose of 4,000 roentgens, measured on the skin. The total dose during the second cycle was given

tissue. On Jan. 1, 1944 there was no sign of disease and the voice was normal. For some patients, especially persons with thin necks, this irradiation is somewhat too intense; hence the daily and total doses have been reduced by 10 to 20 per cent, depending on the thickness of the neck.

There are several significant features about this case. The most important is the disappearance of an extensive intrinsic squamous carcinoma of the larynx with almost complete fixation of the hemilarynx and subsequent freedom from recurrence for almost three years. Several features of the treatment are interesting. The large total dose (9,600 roentgens) administered in only twelve treatment days was possible with but little reaction in the skin and mucous membrane. The division of the treatment into three cycles with two intervals afforded an opportunity to observe the response of the lesion and plan further treatment accordingly. Finally, this case illustrates that it is practical to test the radiosensitivity of a lesion with a partial irradiation and to use the information obtained as a guide to further treatment.

3. Roentgentherapy, 400 kilovolts, eighteen consecutive treatment days, single field, diminishing port, increasing dose, total dose 6,500 roentgens: This technic is used for the more extensive so-called extrinsic carcinomas of the larynx (pyriform fossa, aryepiglottic folds, epiglottis). The following case exemplifies the method:

TABLE 5.—Results of Radiation Therapy in 170 Cases of Laryngeal Cancer (70 per Cent of Lesions Were Advanced)

Classification	Patients Given Adequate Radiation Therapy	Number Living and Well	Number Living with Disease	Number Died of Cancer	No. Died of Other Causes (No Recurrence)
Vestibule (false cord and epiglottis)					
Without adenopathy....	16	11	7	23	2
With adenopathy.....	37	5	4	27	1
Ventricular cavity.....	15	2	6	7	0
True cord					
Movable.....	30	24	0	4	2
Partly fixed.....	20	15	1	2	2
Fixed.....	20	4	0	15	1
Subglottis.....	2	1	0	1	0
Total.....	170	65	18	79	8

CASE 3.—A man aged 57 had an extensive swelling over the region of the thyroid and cricoid, obliterating the normal contour of the anterior surface of the neck. There was pronounced swelling and ulceration in the region of the right true and false cords, extending to the subglottic region. The right arytenoid was enlarged and the right hemilarynx partly fixed. There was no cervical adenopathy. Biopsy showed squamous carcinoma. Roentgen examination of the soft tissue of the larynx disclosed extensive destruction of the cricoid and thyroid cartilages. Roentgen treatment was given between July 7 and July 30, 1938 over a period of twenty-one treatment days, one treatment daily through a single right lateral field, with 400 kilovolts and 5 milliamperes filtered through 8 mm. of copper; the distance varied between 65 and 90 cm., and the size of the port varied between 8 by 10 and 3 by 4 cm. The daily dose was increased gradually from 100 to 700 roentgens, measured on the skin, and the roentgen intensity varied between 4.1 and 7.5 roentgens per minute. The total dose was 6,500 roentgens. The tumor regressed rapidly during the first few days of treatment. Approximately one week after treatment was begun, an abscess over the thyroid region was incised and evacuated. The weight increased, and the general condition improved. On October 6, about ten weeks after the completion of treatment, there was no definite evidence of disease, the general condition was excellent and the patient had no complaints. Subsequent roentgen examination of soft tissue of the larynx disclosed a remarkable restoration of the cartilages to what seems to be a normal state. There is no sign of recurrence at this time, five and one-half years after completion of treatment.

over the left side of the larynx. The first cycle was 3,600 roentgens and the second cycle 4,000 roentgens, making a total of 7,600 roentgens for the two cycles during ten days of treatment.

The maximum reaction on the skin consisted of a deep pigmentation. The maximum epithelial reaction was a mild epithelitis. The mobility of the right hemilarynx was restored to normal on April 4, eighteen days after the completion of the second cycle of irradiation. The lesion continued to regress and finally disappeared on April 25, thirty-eight days after the last treatment of the second cycle; but there remained a small, irregular, nonulcerated nodule, about 6 mm. in diameter, situated on the posterior extremity of the right true cord. On May 9, fifty-three days after the last treatment, it was decided to administer a third course of irradiation. It was not possible to decide clinically whether this nodule contained a remnant of carcinoma, and it was believed that a biopsy should not be performed. From previous experience it seemed that a third course of irradiation could be given with safety. Consequently the third course was administered in two days as follows: field over the right side of the larynx, 400 kilovolts, 5 mm. of copper, 80 cm. distance, 7.5 square centimeter port, 7.4 to 9.8 roentgens per minute, 500 roentgens twice daily for two days, or a total of 2,000 roentgens, measured on the skin. The grand total for the three cycles of irradiation was 9,600 roentgens. The last treatment was given on May 10, 1941. The nodule regressed slowly and finally resolved into a small fibrous tag about 3 mm. in diameter, which has remained stationary almost three years. It is obviously an area of scar

One must be extremely cautious in drawing conclusions from this particular case because, although the lesion was most extensive, it was obviously also highly radiosensitive.

This technic ¹¹ is the most effective so far observed for the more advanced carcinomas of the larynx. When the cervical adenopathy has been too extensive to be included in the portals, an additional cycle of treatment has been given to such areas as could not be included in the first cycle of treatment.

11. This was the first case treated by this method, and the treatment time was twenty-one days. The treatment time has now been reduced to eighteen days, and two treatments are given daily. The total dose remains the same.

RESULTS

Table 5 shows the results of radiation therapy in 170 cases of laryngeal cancer receiving adequate therapy. It should be noted that there were only 30 early lesions in the entire group. These were the movable carcinomas of the true cord. There were 20 partly fixed lesions of the true cord which may be regarded as moderately early. The remainder of the patients, numbering 120 (70 per cent) had advanced carcinoma, in many instances accompanied by cervical adenopathy. Since the table includes patients who have been free from disease only one year, no conclusion is drawn as to the permanence of the results. The table is intended only to indicate the present status of the patients.

Table 6 shows an analysis of the results of therapy for the various types of laryngeal cancer by year of admission. The variation in the percentages of patients free from disease must be due largely to corresponding differences in the proportion of advanced lesions and to some degree to the efficiency of the treatment.

Table 7 shows the results of radiation therapy in 50 cases of operable so-called intrinsic carcinomas of the true cords in which the vocal cords were freely movable or partly fixed, and table 8 shows the results in this group by year of admission.

It is instructive to analyze the failures of radiation therapy in the cases of early lesions. There were 7 failures in the 50 cases of movable and partly movable carcinomas of the true vocal cords. Two patients acquired radionecrosis as a result of a dosage that they could

TABLE 8—Results of Radiation Therapy in 50 Cases of Carcinoma of the True Cord in Which the Cord Was Either Movable or Partly Fixed

Year of Admission	Number Treated	Alive and Free of Disease at the End of				
		1938	1939	1940	1941	1942
1938..	9	9	7	7	7	7
1939..	8	.	8	7	7	7
1940..	11	..	.	11	9	9
1941...	15	..	.	..	12	9
1942....	7	.	.	.	..	7
Total	50	9	15	25	35	39*

* One patient died four years and seven months after treatment of cancer of the palate and free from cancer of the larynx. This patient is counted as cured of laryngeal cancer.

not tolerate. This occurred in the beginning of these studies, and this complication has since been eliminated. It is well known that the most important source of error in radiation therapy is underdosage rather than over-

TABLE 6—Results of Radiotherapy for the Various Types of Laryngeal Cancer by Year of Admission*

	No of Patients	1938		1939		1940		1941		1942	
		Treated	Well	Treated	Well	Treated	Well	Treated	Well	Treated	Well
Vestibule											
Without adenopathy	46	7	1	9	2	5	2	11	2	14	2
With adenopathy ..	37	4	0	7	0	6	0	14	3	6	1
Ventricular cavity	15	2	1	0	0	2	1	4	0	7	0
True cord											
Movable ..	30	5	2	7	6	6	6	8	6	4	4
Partly fixed	20	4	4	1	1	5	4	7	4	..	..
Fixed	20	7	0	3	0	2	0	6	3	2	1
Subglottis.	2	1	0	1	1	0	0	0	0	0	0
Total	170	30	8	23	10	26	13	50	18	36	16
Percentage living and well.			26.7		35		50		36		44.4

* Under each year is given the number of patients treated during that year and in the column marked "Well" is the number free of disease on Jan 1, 1944

Causes of Failure of Radiation Therapy.—The most important cause of failure of radiation for laryngeal cancer is the extent of the disease. The other factors are the general condition of the patient and the efficiency of the treatment. Patients who are debilitated by chronic

TABLE 7.—Results of Radiation Therapy in 50 Cases of Movable and Partly Fixed Squamous Carcinomas of the True Cord

	No of Patients Treated	Number Free of Disease 1 to 5 Years *	Percentage Well
Movable .	30	25 §	83
Partly fixed	20	15 †	75
Total	50	40	80

* Twenty three of 28 patients, or 82 per cent, are well and have been free of disease more than three years (see table 8)

§ One died four years and seven months after treatment, of carcinoma of the palate; 1 died seven months after treatment, of angina pectoris. In both instances there was no sign of recurrence; the first is counted as cured, the second as a failure

† One died one year and eleven months after treatment, of cerebral hemorrhage; 1 died 2 years and one month after treatment, of heart disease. In both cases there was no sign of recurrence. In the table these 2 patients are counted as if they had died of cancer

disease do not tolerate the treatment well, and the presence of syphilis is especially unfavorable. Aspiration bronchopneumonia sometimes complicates the radiation therapy of advanced infected carcinoma of the larynx in old debilitated patients.

dosage. In an effort to avoid radionecrosis, inadequate treatment is usually given, with the natural consequence of low curability and high incidence of recurrence. In order to obtain the maximum benefits from radiation therapy, the intensity of the treatment must approach the tolerance of the normal tissues very closely. The individual variations in the tolerance to irradiation add to the difficulties. An important factor that lowers the tolerance of the normal tissues to irradiation is the presence of secondary infection in the larynx when treatment is begun or its entrance during the treatment. Radionecrosis can arise as a result of this complication even when the intensity of the treatment is well within the limits of safety.

One of the 7 failures was caused by radionecrosis associated with secondary infection, and in another patient with syphilis radionecrosis developed. In both the latter cases the dosage was well within the limit of safety. One patient experienced a subglottic recurrence after the disappearance of an early lesion of the true cord, and another acquired new lesions in the larynx and pharynx, probably representing lymphatic extensions. In both cases the disease showed clinical evidence of extremely high malignancy and histologic signs of severe anaplasia. One 69 year old debilitated patient refused to cooperate as regards eating and died of inanition about one month after completion of treatment.

COMMENT

Early Diagnosis.—Out of 170 cases of carcinoma of the larynx treated by adequate radiation therapy, the disease was comparatively early in only 50 cases, or 30 per cent. When one considers the entire series of 413 cases, the incidence of early lesions is approximately 20 per cent. (There were 88 comparatively early lesions in 413 cases.) Thus a reasonable chance of cure at the very outset existed in only 20 per cent of the cases. This is a challenge to the medical profession and to the public in the matter of early diagnosis and a special opportunity for leaders in cancer control. Since these lesions produce early symptoms and since most of them (lesions of the true cord) grow slowly and almost never metastasize in their early stages, the opportunity for a planned campaign of education in this field of cancer control is indeed unique.

The majority of cancers of the larynx begin on the true vocal cords. Hoarseness is an early symptom in 95 per cent of these cases. Examination of the larynx with a laryngeal mirror easily establishes the presence of a growth on the vocal cords, and biopsy readily confirms the diagnosis. Early lesions limited to one cord that have not reached the posterior commissure or crossed the anterior commissure yield about 80 per cent cures by laryngofissure and have at least an equal chance of cure by adequate radiation therapy, with restoration of the voice to normal. It is only too evident, therefore, that the problem of laryngeal cancer hinges mainly on early diagnosis. No form of internal cancer offers a more favorable opportunity for early detection. The main difficulty lies in the fact that hoarseness is such a common symptom associated with the presence of a cold. A campaign of education should be undertaken to acquaint the public with these facts, and the layman should be taught to insist on a laryngeal examination, preferably by a laryngologist, if hoarseness persists for longer than two weeks. Theoretically, a combination of early diagnosis and prompt and appropriate treatment should render cancer of the larynx largely a disease of historical interest.

Treatment.—The two most significant features in these studies are (1) the results of treatment of 50 operable carcinomas of the larynx by radiation therapy and (2) the use of a new and more effective method of irradiation. It is evident that the good results obtained in this selected group of cases are due to the fact that the lesions were comparatively early as well as to the greater effectiveness of the new method of treatment.

Of the 50 cases of operable lesions, the cords were freely movable in 30 cases and partly fixed in 20 cases. In many instances the lesion involved both true cords or extended to the false cords, ventricular cavity or subglottis. Twenty-four of the lesions, or 48 per cent, were amenable to laryngofissure. Twenty-one, or 42 per cent, were clearly too advanced for laryngofissure and would have required total laryngectomy, and in 5 cases, or 10 per cent, a decision as to the extent of the operation indicated is difficult. There were only 2 recurrences (4 per cent) in this group. Both were due to an exceptionally high degree of malignancy, indicated by the clinical course as well as by the pronounced anaplasia in the microscopic structure.

Although no positive conclusions can be drawn from the more recent cases, it was considered useful to publish the results as they stand in order that other investigators who are interested may pursue the problem along similar lines. It should be added that

although the five year period of freedom from recurrence is generally accepted as an indication of cure this figure is arbitrary. Thus it is well known that for cancer of the breast and thyroid it is entirely inadequate, whereas patients with early carcinomas limited to the true vocal cords treated by adequate radiation therapy rarely have recurrences after two years of freedom from disease. In the group of cases of movable and partly fixed carcinomas of the true cords the longest interval between treatment and recurrence was one year and seven months. This experience permits the statement that when a carcinoma of the true cord is treated by adequate radiation therapy while the cord is still freely or partly movable, the chances of recurrence or metastasis after two years of freedom from disease are extremely remote.

So uniformly unsuccessful was radiation therapy of laryngeal cancer up to 1922 that surgical operation was the only form of treatment for this disease. The situation changed in 1922, when Regaud, Coutard and Hautant¹² related their experience with roentgen therapy in 6 cases of inoperable carcinomas of the larynx before the International Congress of Otolaryngology in Paris. Coutard subsequently reported 27 per cent of five year cures among 142 cases of carcinoma of the larynx treated with x-rays in the Curie Institute of Paris. There followed numerous reports by various authors confirming these results. Harmer¹³ of London treated a series of early operable carcinomas of the true vocal cord by placing radium against the base of the lesion through a window made by resecting a portion of the thyroid cartilage, with excellent results. Further reports of radiation therapy of operable laryngeal cancer include those of Quick,¹⁴ Jackson,¹⁵ Lenz,¹⁶ Blady,¹⁷ Cutler¹⁸ and others.

Surgeons and radiotherapists alike have properly hesitated to substitute a comparatively new method of treatment for the standard surgical procedures of laryngofissure and laryngectomy. Yet there was every reason to believe that carcinomas of the larynx would yield to radiation therapy. Being epidermoid carcinomas histologically, they fall directly within the radiosensitive group in the same way as epidermoid carcinoma of the skin and mucous membrane of the mouth. The view that adult squamous carcinoma is radioresistant and hence incurable by radiation therapy has been proved a fallacy and is no longer tenable. Furthermore, a high percentage of carcinomas arising in the false cords, epiglottis, ventricular cavity, aryepiglottic folds and pyriform fossae are noticeably undifferentiated and comparatively sensitive to radiation.

In 1931 I began to treat selected cases of operable carcinoma of the true cords by means of radiation

12. Regaud, C.; Coutard, H., and Hautant, A.: Rapport sur la Curie therapie et la roentgentherapie dans le cancer du larynx, Ann. d. mal. de l'oreille et du larynx 41:967, 1922.

13. Harmer, W. Douglas: The Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air Passages, University of London Semon Lecture, London, John Murray, 1932.

14. Quick, Douglas: Carcinoma of the Larynx, Am. J. Roentgenol. 38: 821 (Dec.) 1937.

15. Jackson, Chevalier, and Jackson, Chevalier L.: Cancer of the Larynx, J. A. M. A. 111: 1986 (Nov. 26) 1938.

16. Lenz, M.: X-Ray Treatment of Diseases of the Larynx, Ann. Otol., Rhin. & Laryng. 52: 85, 1943.

17. Jackson, Chevalier L., and Blady, John V.: Criteria for the Selection of Treatment of Cancer of the Larynx, Arch. Otolaryng. 37: 672 (May) 1943.

18. Cutler, Max: Cancer of the Larynx: Relation Between Gross Anatomy, Microscopic Structure and Radiosensitivity, J. A. M. A. 115: 1339 (Oct. 19) 1940. Cutler, Max: Cancer of the Larynx: A Radiotherapeutic Test as an Aid in Choosing Between Operation and Irradiation, Arch. Otolaryng. 39: 53-58 (Jan.) 1944.

therapy. In the beginning, this therapy was used only when the patient refused laryngectomy or when there were general contraindications to surgical intervention. As the effectiveness of irradiation increased and the results improved, my colleagues and I began to irradiate lesions of borderline operability, and finally in 1938, when the method of concentration radiotherapy seemed especially effective, we began to treat operable lesions by the new methods of irradiation by choice. It was determined early in this research that, except in isolated instances, carcinomas of the true cords with complete fixation of the larynx were unfavorable for radiotherapy. It was also established that mobility or partial mobility of the cords is a most important and favorable sign indicating relative radiosensitivity.

The progress of irradiation in the treatment of laryngeal cancer has naturally led to the question whether radiation therapy should continue to be limited to cases in which operation is contraindicated. Until recently this is the view which was held by the laryngologists. Thus Martin¹⁹ advised operation as the method of choice for intrinsic cancer of the larynx. He pointed out that some early intrinsic lesions of the cord are curable by roentgen therapy, but he added that the superiority of roentgen therapy over surgical removal has not been demonstrated. A change in this attitude began with the report of the Jacksons in 1938. Speaking from an extensive surgical experience and impressed with the improved results of roentgen therapy demonstrated by their associated roentgenologists, these authors made the following statements:

Since the year 1930, however, our observations have led us to believe that there are growths classed as operable for which the patient is justified in choosing irradiation in preference to operation. . . . Our statistics do not yet justify abandonment of the well established operation of laryngofissure when the growth is operable by this method. By operable growth in this connection we mean early intrinsic cancer of limited extent. On the other hand, when the malignant growth is locally ideal for operation but the patient is a bleeder or has a serious organic ailment such as marked arteriosclerosis, advanced cardiac disease, intractable diabetes, pulmonary tuberculosis, a psychosis or any other condition abnormally shortening life expectancy, we would now class the patient as unsuitable for operation. Classification of patients has been somewhat changed by the improved results obtainable by irradiation and we now classify as unsuitable for operation a somewhat larger proportion of patients with early intrinsic disease. . . . As between a laryngectomy and irradiation, we are decreasing the number of laryngectomies in proportion to the number of patients treated with irradiation.

The authors concluded that their experience warranted them in the belief that the future will probably see a progressive decrease in the relative number of laryngectomies.

The trend is further indicated by Schall,²⁰ who stated recently that "the ideal treatment is one that not only eradicates the disease but also leaves a normal physiological state. External irradiation answers these requirements. Laryngeal cancer that responds to irradiation leaves the patient with a normal, or nearly normal, useful voice." For localized lesions of the cord, Schall advises irradiation if the cancer is of grade 3 or 4 (Broders' classification) and laryngofissure for grades 1 or 2.

Examination of table 8 shows that 28 patients were treated in the years 1938, 1939 and 1940 and that 23, or 82 per cent, are alive and have been free from disease more than three years. The Jacksons²¹ cited between 80 and 85 per cent of three year results in patients treated by laryngofissure in strictly suitable cases. Of the 28 lesions in this series, only 14 were early enough for laryngofissure, 10 would have required total laryngectomy, and for the remaining 4 the decision is difficult. It seems, therefore, that the results of radiation therapy as administered in this series of cases are superior to those of surgery, especially when one considers that at least 10 patients who would have required total laryngectomy were rendered free from disease by radiation therapy, with restoration of the voice to a practically normal state.

For surgeons who may choose laryngofissure in preference to radiation therapy, these results should lead to a more strict selection of cases for laryngofissure. In any event, patients who are not strictly suitable or are definitely unsuitable for laryngofissure but whose lesions are not completely fixed should be given an opportunity to choose radiation therapy in preference to total laryngectomy.

The procedure at this time is to perform laryngectomy for fixed intrinsic lesions in which there are no general contraindications to operation, and as the results of irradiation improve we are more strict in our classification of operability; but we go one step further, which we consider our results justify. When the cords are still movable or partly movable, we choose irradiation in preference to surgical operation regardless of the histologic grading. Some of these lesions are so early as to be amenable to laryngofissure; others would require complete laryngectomy. Table 6 shows the results obtained with 20 fixed lesions of the true cords in patients who either refused operation or in whom there were general contraindications to laryngectomy. Only 4 patients are free from disease. In cases in which a decision between surgical operation and irradiation is difficult for local or general reasons, we apply the radiotherapeutic test and are guided by the response to the initial cycle of treatment. Included in this group are patients whose lesions are too extensive for laryngofissure and to whom loss of the voice is a matter of special concern. Under these circumstances we sometimes feel justified in executing either a partial or complete irradiation with the understanding that a laryngectomy will be performed if the irradiation fails. In some instances we have had to resort to operation, and in others the patients are apparently cured by irradiation. The selection of treatment is highly individual, and no rigid rule can be applied to all cases. The method of treatment depends on numerous factors, including the location and extent of the lesion, the extent of infiltration as indicated by mobility of the structures, the general condition of the patient and in certain instances the patient's ability to adjust himself to laryngectomy.

CONCLUSIONS

Intrinsic squamous carcinoma of the larynx is curable by correct radiation therapy, the percentage of cures depending on the extent of the lesion and the efficiency of the treatment. Concentration radiotherapy has

19. Martin, Hayes: *Cancer of the Larynx*, in Nelson Loose Leaf Surgery, New York, Thomas Nelson & Sons, 1942, p. 431.

20. Schall, LeRoy A.: *Carcinoma of the Larynx*, New England J. Med. 229: 574, 1943.

21. Jackson, Chevalier, and Jackson, Chavelier L.: *Cancer of the Larynx*, Philadelphia, W. B. Saunders Company, 1939.

proved to be the most effective form of irradiation. When the cords are freely movable or only partly fixed, the curability is high; but when they are completely fixed, cure is difficult and rarely accomplished. Eighty-two per cent of the patients with movable and partly fixed lesions of the true cords are alive and have been free from disease more than three years. The voices of these patients are practically normal. The most significant result of this research is the eradication by means of an improved method of radiotherapy of a group of intrinsic squamous carcinomas of the larynx so advanced as to have required total laryngectomy and hitherto generally regarded as radioresistant and incurable by irradiation.

430 North Michigan Avenue.

USE OF THROMBIN AND FIBRINOGEN IN SKIN GRAFTING

PRELIMINARY REPORT

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The importance of skin grafting in military reconstructive surgery cannot be overestimated. Improvements in technic of grafting must be sought for constantly and particularly improvements which will shorten operative time and increase percentage of takes. The possibility of such an improvement using thrombin and fibrinogen arose from the observations of Dr. M. E. Sano of Temple University School of Medicine, who used heparinized plasma and pressure as an adhesive for grafts.¹

Thrombin and fibrinogen have both been known for many years, as has the reaction between them, namely the capacity of the former to transform the latter into insoluble fibrin. It is said to be this reaction which is responsible for blood coagulation. A main deterrent to the exploration of the medical and surgical potentialities of these materials had been the difficulty and expensiveness of their preparation. This has been circumvented in recent years by the work of Seegers² and Parfentjev³ and by the improvements in fractionation

of human plasma by E. J. Cohn and his associates.⁴ In the latter fractionation both thrombin and fibrinogen become by-products of human serum albumin. The extensive use of the latter by the armed forces as an "antishock" agent has increased the availability of these by-products. Thrombin has already been mentioned several times in the literature as a local hemostatic.⁵ Fibrinogen has recently been employed in neurosurgical and tendon repair work with encouraging results.⁶ To our knowledge neither of these materials has been used in connection with skin grafting except perhaps the use of thrombin as an adjunct to hemostasis. It is our purpose in this paper to present findings on 8 patients skin grafted with varying technics using thrombin and fibrinogen.

Because it is well known that results in skin grafting are difficult to evaluate unless one standardizes all conditions, an outline of the general and local treatment will be presented first. Before the start of these observations, it had been confirmed by two of us⁷ that unsatisfactory results occurred in the taking of grafts unless hemoglobin, plasma proteins, prothrombin and the general condition of the patient were kept at a high level. Accordingly, these practices were put into effect in the course of the use of thrombin and fibrinogen:

GENERAL TREATMENT BEFORE AND AFTER GRAFTING

1. High protein (more than 100 Gm. daily), high carbohydrate, high cysteine, low fat diet.
2. Supplementary routine vitamin A, thiamine, nicotinamide, riboflavin, ascorbic acid and B complex in doses exceeding daily requirements. Vitamin K as necessary to maintain normal prothrombin level.
3. Ferrous sulfate and blood transfusions as necessary to maintain hemoglobin above 13 Gm. per hundred cubic centimeters.
4. Plasma and blood transfusions as necessary to maintain plasma proteins above 6.5 Gm. per hundred cubic centimeters.

LOCAL TREATMENT OF BURNS PRIOR TO SKIN GRAFTING

1. Six per cent sulfanilamide ointment, pressure dressings and splints as described elsewhere.⁸
2. Change of dressings after ten to fifteen days and subsequent open treatment with saline and chloroazodin compresses, sulfanilamide 10 per cent calcium carbonate powder,⁹ petrolatum gauze and adhesive strapping or reapplication of 6 per cent sulfanilamide ointment and pressure.
3. During the forty-eight hours before grafting, continuous chloroazodin compresses and sulfanilamide powder.

4 Cohn, E. J. The Properties and Functions of the Plasma Proteins, with a Consideration of the Methods for Their Separation and Purification, *Chem. Rev.* **28**: 395-417 (April) 1941.

5 Lozner, E. L., MacDonald, Harriet, Finland, Maxwell, and Taylor, F. H. L. The Use of Rabbit Thrombin as a Local Hemostatic, *Am. J. M. Sc.* **202**: 593-598 (Oct.) 1941. Tidrick, R. T., Seegers, W. H., and Warner, E. D. Clinical Experience with Thrombin as a Local Hemostatic Agent, *Surgery* **14**: 191-196 (Aug.) 1943.

6 Michael, Paul, and Abbott, Walter. The Use of Human Fibrinogen in Reconstructive Surgery, *J. A. M. A.* **123**: 279 (Oct. 2) 1943.

7 Deever, J. M., Cronkite, E. P., and Phillips, R. B. Case Report of a Severe Burn Demonstrating Abnormal Nitrogen Metabolism, to be published.

8 Deever, J. M., and Cronkite, E. P. Practical Considerations in the Treatment of Burns, *U. S. Nav. M. Bull.*, to be published.

9 Schmclkes, F. C. Chemical Considerations Governing the Local Chemotherapy of Wound Infections, *Surg., Gynec. & Obst.* **77**: 69-73 (July) 1943.

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The products of human plasma fractionation employed in this work were prepared from blood collected by the American Red Cross and processed by the Department of Physical Chemistry, Harvard Medical School, Boston, under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Harvard University.

Most of the thrombin used in this work has been the rabbit "hemostatic globulin" supplied by the Lederle Laboratories, Inc. A smaller amount of the thrombin and all the fibrinogen used was human in species and supplied by Drs. S. H. Armstrong and E. J. Cohn of the Department of Physical Chemistry, Harvard Medical School. Some of the latter was redissolved, redispensed into smaller containers, refrozen and redried by the Blood Plasma Laboratory of the U. S. Naval Medical School.

1 Sano, M. E. Skin Grafting: A New Method Based on the Principles of Tissue Culture, *Am. J. Surg.* **61**: 105-107 (July) 1943.

2 Seegers, W. H.; Brinkhaus, K. M.; Smith, H. P., and Warner, E. D. The Purification of Thrombin, *J. Biol. Chem.* **126**: 91-95 (Nov.) 1938.

3 Parfentjev, I. A. A Globulin Fraction in Rabbit's Plasma Possessing a Strong Clotting Property, *Am. J. M. Sc.* **202**: 578-584 (Oct.) 1941.

TECHNIC OF SKIN GRAFTING USING THROMBIN
AND FIBRINOGEN

On the basis of the experience to date, the following technic has been evolved:

1. Thrombin is supplied dried in vials requiring 5 cc. of distilled water for regeneration.
2. Fibrinogen is supplied similarly.
3. Thrombin is applied as a spray by means of an atomizer.
4. Fibrinogen is applied by dipping the grafts or flooding the surface.
5. The grafts are cut. Free hand, simple pinch or split thickness grafts taken by the Padgett dermatome were used. All split thickness grafts were perforated to allow for drainage.
6. Bleeding from the donor site is controlled with thrombin, dusted with sulfanilamide 10 per cent calcium carbonate powder and a 6 per cent sulfanilamide ointment dressing applied.
7. The recipient site is cleansed with ether; exuberant granulations and undesirable scar tissue are removed by sharp dissection, and bleeding is controlled by thrombin, pressure and elevation.
8. The grafts are dipped in the fibrinogen solution and fitted on the site to conform to the defect. The area is then sprayed with thrombin and simultaneously flooded with fibrinogen and the pressure dressing applied immediately.
9. When large grafts are sutured into place, fibrinogen and thrombin are run under the graft following the suturing, and immediately pressure is applied for two minutes with a rubber sponge.
10. The application of hot packs to the grafts was found to increase the adhesiveness still further.

DRESSING APPLIED TO ALL GRAFTS

1. Perforated cellophane is applied over the graft and sprayed with sulfanilamide 10 per cent calcium carbonate powder.
2. Over the cellophane are placed ten layers of gauze saturated with glycerin¹⁰ containing 2 per cent of sulfanilamide. A sheet of plain cellophane is placed over this and then rubber sponges or pads of cellucotton that are secured by adhesive tape or adhesive so as to maintain continuous firm pressure.
3. Grafts are dressed on the third, fifth and seventh days and from then on as indicated.

REPORT OF CASES

CASE 1.—On June 1, 1943 bad burns were sustained over the face, hands and forearms and feet. All areas healed quickly except the backs of the hands and the fingers, which had third degree burns. On June 28 the hands were ready for grafting, and split thickness grafts were applied by the collodion technic of Poth¹⁰ and a few sutures. Only portions of the grafts took because of uncontrollable hemorrhage that formed clots under the grafts, and because of the inflexibility of the collodion. On July 4 the left hand was grafted with poor results, apparently from hemorrhage under the grafts and slipping due to poor bandaging. The areas became infected, and it was impossible to graft again until August 2. At this time the split thickness grafts were cut into 1 cm. or smaller squares¹⁰ for use as pinch grafts. It was difficult to get these to adhere to slanting surfaces or in the webs of the fingers. It took a variable period for the pieces to stick without

any additional procedures. It was decided at this time to compare whole blood, plasma, pooled plasma and fibrinogen solution with and without thrombin with respect to speed and efficacy of adherence of the grafts.

The granulating area was painted with the blood, plasma and fibrinogen and then the pieces of grafts were dipped in the thrombin solution and applied to the painted recipient areas and the time was measured until the grafts no longer would slide when held perpendicularly and until one could demonstrate fibrin strands by teasing the edge of the graft with a needle. The results are presented in the accompanying table.

The thrombin was most effective in controlling hemorrhage from granulating surfaces after trimming and from the donor sites. All these grafts took except a very few placed in the webs of the fingers and over the joints, and this was probably due to inadequate immobilization.

CASE 2.—Both legs were extensively burned about seven days before entry. Infection set in. After entry to the hospital both limbs were immobilized in plaster casts after application of 6 per cent sulfanilamide ointment. After two weeks the casts were removed. The left leg was completely healed. The right leg presented a large, irregular, clean granulating surface involving the side of the ankle, extending up to the head of the fibula and from the anterior border of the tibia to the midpart of the calf posteriorly. No epithelial islands remained

Comparative Study of Various Agents Applied Between Graft and Recipient Area in Case 1

Materials Applied Between Graft and Recipient Area	Time to Adhere, Minutes	Degree of Adhesiveness	Comment
Nothing (control).....	3-13	Low	
Whole citrated blood.....	4-7	High	Vision obscured by clotted blood
Whole citrated blood plus thrombin	3-1½	High	Vision obscured by clotted blood
Patient's citrated plasma.....	3-5	High	
Patient's citrated plasma plus thrombin	3-1½	High	
Pooled citrated plasma.....	5-7	High	
Pooled citrated plasma plus thrombin	¼-5/12	High	
Fibrinogen.....	2-8	High	
Fibrinogen plus thrombin.....	¼-¾	High	

within this area, but epithelial proliferation was going on actively from the surrounding skin edges. Split thickness grafts were taken from the thighs, fitted to the granulating area and held in place with a few stay sutures. There was considerable bleeding around the sutures. Thrombin, elevation and pressure quickly controlled this hemorrhage. The thrombin solution was then run under the grafts, followed by fibrinogen solution and pressure; within one minute the graft was held firmly against the granulations. The usual dressings were applied, and the leg was placed in a posterior plaster splint.

Hemorrhage from the two donor sites was controlled within one minute by thrombin and pressure.

About 40 per cent of the graft slipped anteriorly and did not take. We believe this was due to too much tension on the sutures and could have been avoided by letting the graft retract maximally before suturing. The remainder of the graft did well, and further grafting was not necessary.

CASE 3.—A traumatic amputation of the tip of the third left finger was treated with saline solution and chloroazodin compresses and within one week was ready for grafting. The skin edges and exuberant granulations were trimmed. Considerable bleeding started that was not controlled by elevation but was stopped within two minutes by thrombin, pressure and elevation. Then multiple pinch grafts were applied. It was very difficult to apply a dressing without brushing off the grafts; therefore the grafted area was flooded with fibrinogen solution, and thrombin was sprayed onto it with an atomizer. Within a few seconds a thin fibrin gel was anchoring the pinch grafts in place, and this greatly facilitated the application of the dressing. All the grafts took, and within two weeks the patient had a usable finger.

10. Poth, E. J.: A Technic of Skin Grafting, Surg., Gynec. & Obst. 75: 779-784 (Dec.) 1942.

CASE 4.—A broken ankle and a contused, lacerated left thigh resulted in a large granulating surface measuring about 5 inches by 3 inches.

A split thickness graft was applied and sutured loosely in four places. Citrated plasma, obtained from the patient, was run under the graft followed by rabbit thrombin. There was firm adherence within one and a half minutes. Serum formed under the upper half of the graft, and this part did not take. We believe this was due to an inadequate pressure dressing.

The upper half was regrafted with pieces of free hand grafts about 1 inch square after being dipped in the patient's plasma and sprinkled with human powdered thrombin. These grafts took completely.

CASE 5.—A contused, lacerated injury was sustained to the anterior surface of the leg just lateral to the tibia. This resulted in an elliptic granulating wound 6 inches long and $2\frac{1}{2}$ inches wide. A split thickness graft was very loosely sutured into place after the surface of the granulations had been dusted with powdered human thrombin. The hemorrhage from the sutures was easily controlled by thrombin and pressure. The blood that flowed under the graft was clotted, and the graft was snugly held in place against the granulations. This graft took completely.

Hemorrhage from the donor area was controlled almost entirely by powdered thrombin that was rubbed on the surface, except for one small artery that persisted in spurting.

CASE 6.—Gas gangrene had developed in comminuted, compound fractures of the toes and metatarsals. All the toes except the small toe were amputated (guillotine type) at the head of the metatarsals. Free incision of the skin over the foot was performed. With sulfadiazine, local hydrogen peroxide and zinc peroxide and polyvalent antitoxin the patient recovered. A large irregular granulating defect over the heads of the metatarsals resulted, measuring $3\frac{1}{4}$ by $1\frac{3}{4}$ inches. This was covered with a split thickness graft that was sutured in place with interrupted sutures. Considerable bleeding started and was controlled by thrombin and pressure except at the plantar border of the graft, where all measures were useless. The usual pressure dressing was applied, but a hematoma developed under the plantar half of the graft and this area did not take.

Later, pinch grafts were applied to this area and flooded with fibrinogen and thrombin solutions. These grafts took completely.

A large hematoma then developed under the thin epithelium that had grown in from the surrounding skin and had not been excised at the time of grafting. This was excised, cleaned up and grafted. This time a small piece of split thickness was taken, cut into small squares (1 cm. or less) and placed on the raw surface and secured by the fibrinogen-thrombin technic. The immediate result was excellent. There was less than a millimeter between the individual pieces. No suturing was necessary, and less time was consumed than if one had sutured a single piece in place.

This patient is still under observation.

CASE 7.—Extensive damage to both thighs had left a granulating defect $4\frac{1}{2}$ by 6 inches on the right thigh and $2\frac{1}{4}$ by $3\frac{3}{4}$ inches on the left thigh. Both surfaces were very concave. Split thickness grafts were taken, and hemorrhage from the donor sites was dramatically controlled by thrombin within forty-five seconds.

On the right leg half inch squares of skin and irregular odd shaped pieces were fitted together after flooding the granulations with the patient's own citrated plasma. Each piece of skin was dipped in liquid thrombin (rabbit). After two minutes the grafts were firmly adherent. On the left leg one perforated piece of skin was sutured in place, and then thrombin and plasma were run under the graft and pressure was applied. After two minutes the graft remained firmly adherent to the concave depression. The two sides did equally well with complete takes.

CASE 8.—A burned heel resulted in a $1\frac{1}{2}$ inch round defect. This was covered with multiple pinch grafts, flooded with fibrinogen solution and sprayed with rabbit thrombin. Imme-

diately a firm fibrin gel formed which held all the grafts in place. The usual dressing was applied. The result was a complete take and a valuable, usable heel resulted.

COMMENT

Poth¹⁰ has pointed out four factors with respect to skin grafting which "militate against early vascularization: (1) an anatomically poor recipient bed, (2) faulty approximation of graft and recipient surface, (3) an improperly prepared graft and (4) the presence of infection." The evidence that has been presented on the use of thrombin and fibrinogen appears to indicate that these agents may be of distinct value with regard to the first two of these factors. By the utilization of thrombin it is possible to trim granulations and scar tissue until the bed is automatically perfect and yet control the hemorrhage in the bulk of instances very quickly. A more extensive report on our use of thrombin as a hemostatic will appear elsewhere.¹¹

Approximation of graft and recipient bed is enhanced by the combined use of thrombin and fibrinogen. The first stage of the taking of a graft is consummated almost instantaneously by the formation of a thin fibrin cement between the graft and recipient area, into which vascular beds may grow under ideal conditions. Dead space can be obliterated completely. Here it should be pointed out that, by the use of relatively pure fibrinogen instead of fresh plasma as its source, serum formation is minimized. The latter phenomenon occurred in case 4 and delayed the take.

Among the advantages in this technic we were impressed perhaps most of all by the amount of time saved. Hemorrhage was controlled quickly. Fewer sutures were used and at times none at all. Dressing was simplified because of the greater adherence of the grafts. The application of grafts in awkward places such as the webs of the fingers where suturing was difficult was simplified by the omission of suturing.

SUMMARY AND CONCLUSIONS

1. Thrombin and fibrinogen have been used in skin grafting.

2. Hemorrhage from the recipient and donor sites was quickly and easily controlled by thrombin in the majority of instances.

3. The grafts were quickly and well anchored into place by the combined use of thrombin and fibrinogen, so that fewer sutures or at times none at all were necessary.

4. It is believed that the use of thrombin and fibrinogen will be a valuable adjunct to skin grafting. It will not replace suturing completely. It is particularly useful with pinch grafts and flagstone grafts.

11. Cronkite, E. P.; Deaver, J. M., and Lozner, E. L.: Experiences in the Use of Thrombin With and Without Soluble Cellulose for Local Hemostasis, *War Med.* 5:80 (Feb.) 1944.

Time Lost Because of Illness.—The time lost because of illness averages between seven and nine days per employed person and represents about 3 per cent of the usual working year. It is estimated that the 36 million wage earners in the country lose about 250 million work days and the 24 million school children lose about 175 million days in school each year from illness. The financial loss of the country as a whole represented by the lost earning power and reduced production totals well over 2 billion dollars a year, equivalent to one-half the cost of maintaining the national government.—The Hospital in Modern Society, edited by Arthur C. Bachmeyer and Gerhard Hartman, New York, Commonwealth Fund, 1943.

Clinical Notes, Suggestions and New Instruments

GENERALIZED EXFOLIATIVE DERMATITIS DUE TO SULFADIAZINE

ROSWELL D. JOHNSON, M.D., NEW HAVEN, CONN.

The object of this case report is to present one of the most alarming toxic reactions of sulfadiazine therapy—generalized exfoliative dermatitis—together with a description of the treatment employed.

REPORT OF CASE

W. A., a boy aged 10 years of Scandinavian parentage, whose history included a Rammstedt procedure for hypertrophic pyloric stenosis at the age of 6 weeks, two convulsions associated with the onset of acute infections at the ages of 1½ years and 3½ years, streptococcal fever with suppurative cervical adenitis at the age of 3½ years and the usual acute exanthems of childhood, had never been treated with any sulfonamide drug in any form previous to the onset of the present illness, nor had he ever had a dermatitis from any cause.

The family history was completely negative in all respects save for asthma, which developed late in the life of the maternal grandmother.

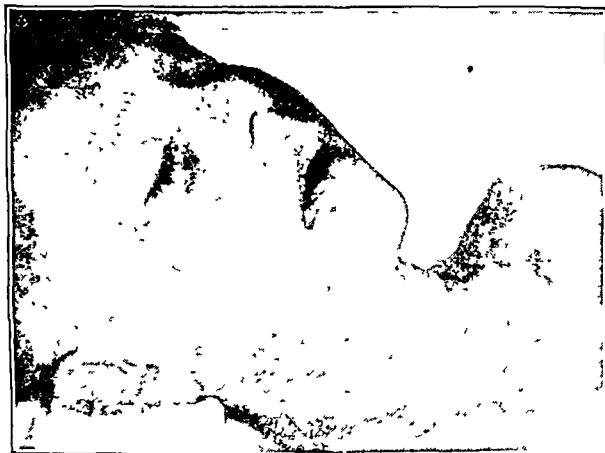


Fig. 1.—Appearance of patient just before height of exfoliative dermatitis. Note here the acute illness of the patient, the eyes swollen shut and crusted blood on the lips.

The present illness started about July 13, 1943 with an acute respiratory infection. The temperature gradually rose to 40 C. (104 F.) on July 16 and the family physician made a diagnosis of pneumonia of the left lower lobe. Bacteriologic or x-ray studies were not done. The patient remained at home, and sulfadiazine therapy was started that day. As an initial dose the child was given 1.5 Gm. by mouth followed by 0.5 Gm. four times daily. The patient's weight was 35 Kg. (77 pounds). The temperature slowly fell to normal within the course of a week. On the eighth day of treatment the drug dose was cut to 1.5 Gm. daily. On the ninth day the temperature was 38.4 C. (101.1 F.) and the face was noted to be very red. On July 25 (tenth day) the drug was stopped, the temperature was still 38.4 C. and the facial redness still pronounced. The following day the mother noted a "prickly heat" rash on the boy's face and arms and a temperature of 39.2 C. (102.5 F.). Almost overnight the rash became much worse, myriads of vesicles appeared and he was admitted to the pediatric service of the New Haven Hospital on July 27.

On admission the temperature was 40.4 C. (104.7 F.); the boy was rational but acutely and seriously ill. A definite morbilliform rash covered the entire body, confluent in areas. Over

the neck, shoulders and arms were numerous large blebs, some of which had already ruptured (figs. 1 and 2). No jaundice was present. There was a very severe conjunctivitis with purulent discharge, chemosis and photophobia. An ulcerative bleeding gingivostomatitis was present with crusted blood on the lips. The cervical nodes were moderately enlarged and very tender.



Fig. 2.—Local condition of skin. Note the large bleb and many smaller ones with complete involvement of entire surface.

The lungs and heart were essentially normal. There was considerable edema of the glans penis and some mucosal pouting at the meatus. Voiding was both difficult and painful. It was impossible for the boy to take any significant amount of fluid by mouth; proctoclyses were impossible, for even the minor trauma of inserting a thermometer initiated rectal bleeding.



Fig. 3.—Appearance of patient two months after recovery, showing normal skin.

Because of the close resemblance between the skin of the patient and that seen in a severe scald, it seemed logical to treat him as for a burn. Consequently, the skin was gently wiped with alcohol, sterile petrolatum strips were applied and overlaid with gauze packs and fluffs, and an elastic bandage then wound snugly over all. This completely covered the extremities and

most of the torso. It was left in place for nine days. Pain was controlled with morphine and particular attention paid to care of the mouth, a topical anesthetic being used at times to ease the discomfort and aid in taking fluids by mouth. Supportive treatment included a constant intravenous drip of 2,500 cc. of fluid daily consisting of 10 per cent dextrose 2 parts and isotonic solution of sodium chloride 1 part. To this was added 100 mg. of ascorbic acid, 10 mg. of thiamine and 25 mg. of niacin, a total of 1,100 cc. of pooled plasma and 6.25 cc. of fresh whole citrated blood.

On the second hospital day the boy vomited a piece of tissue measuring approximately 10 by 0.8 by 0.2 cm., presumably an esophageal cast, judging from the mucosal folds present. On the fifth hospital day the patient reached his lowest point, and recovery seemed improbable. New blebs were appearing daily and continued to do so until the eighth day. A progressive granulocytopenia was present for a time with a very definite shift to the left and the non-segmented forms greatly outnumbering the segmented neutrophils. Ten units of crude liver extract was given intramuscularly in divided doses with equivocal effect. At no time were the blood platelets or the bleeding time essentially altered. By the ninth hospital day the boy was noticeably better, and improvement thereafter was steady. He was discharged from the hospital on the twentieth day with new skin

Clinical Course

Date	Sulfadiazine Levels		White Blood Cells	Non-seg./Seg.	Plasma Protein	Blood Culture	Blood	Plasma
	Blood	Vesicles						
7/27	1.0	2.1	10,300	35/60	..	Negative	..	250
7/28	11,100	31/56	8.0 G.	Negative	...	...
7/29	13,100	36/54	...	...	...	...
7/30	6,200	37/63	7.1	B. subtilis	250	200
7/31	4,850	37/22	...	Negative	...	...
8/1	4,700	24/12	6.8	...	375	300
8/2	4,000	23/9	6.5	B. subtilis	...	250
8/3	7,150	19/8	...	...	...	150
8/4	0.0	1.0	8,400	16/8	...	...	...	...
8/5	Negative	...	...
8/6	12,400	24/48	...	...	...	...
8/8	10,500	22/52	...	...	...	...

over the blistered areas and the mucous membranes greatly improved. Follow-up examinations one week after hospitalization and two months later showed complete recovery (fig. 3).

Details of the clinical course are presented in tabular form.

Nine examinations of urine during the period showed absence of proteinuria, hematuria and casts. The urinary output was usually 1,000 to 1,500 cc. daily.

On August 2, blood electrolyte studies revealed chlorides 96.4 milliequivalents per liter, sodium 134.5 milliequivalents per liter and potassium 5.6 milliequivalents per liter. The non-protein nitrogen was 25 mg. per hundred cubic centimeters. Repeated cultures of blebs were sterile. No virus studies were done.

COMMENT

This additional case of severe exfoliative dermatitis due to sulfadiazine is probably one of the most extensive reported with recovery.¹ There was nothing about the dosage of the drug that was unusual; the daily dose of 2 Gm. (0.85 grain per pound) is well within the accepted range of safety, and the total dose of 19.5 Gm. is frequently exceeded without toxicity.

The plan of therapy, particularly that concerning the local care of the skin, was designed to prevent infection, minimize protein loss and simplify nursing procedures with the patient.

1. Raffetto, J. F., and Nichols, S.: A Nearly Fatal Reaction to Sulfadiazine in a Ten Year Old Girl Involving Skin, Eyes and Oropharynx, *J. Pediat.* **20**: 753 (June) 1942. Greenberg, S. I., and Messer, A. L.: Fatal Bullous Dermatitis Following Administration of Sulfadiazine, *J. A. M. A.* **122**: 944 (July 31) 1943.

A CASE OF SILICOSIS CAUSED BY WHEAT DUST

THOMAS F. HEATLEY, M.D.; DALTON KAHN, M.D., AND
C. R. REX, M.D., TOLEDO, OHIO

F. B., a man aged 55, presented himself for examination on March 4, 1941 with a complaint of severe dyspnea on exertion, dry cough and pain in the chest. His history showed that he



Fig. 1.—Appearance March 4, 1941.

that he could see only a few feet before him. He kept this up for eight years, from 1929 to 1937, when he was obliged to quit because of progressive shortness of breath. He had no history of pneumonia or tuberculosis.

Examination (T. F. H.) showed that he was moderately well nourished and above average intelligence. Blood pressure was 90 systolic, 70 diastolic. Examination of the urine showed no pathologic condition of the kidneys. There was no evidence of syphilis or of tuberculosis. Respirations were increased, 26 per minute, and the chest expansion manifestly diminished.

The stereoscopic examination of the chest (D. K.) revealed that the thorax was barrel shaped and symmetrical. The right base showed no evidence of fluid, and the dome of the diaphragm was smooth and showed no adhesions, the bronchial tree markings were accentuated and showed fibrosis, the hilus glands showed increased density with advanced fibrosis, the bronchial tree markings were accentuated and extended well toward the periphery in the axillary space, the upper lobe markings were accentuated and the apex was not entirely clear or well aerated.

The left base was clear and the diaphragm dome was smooth; the cardio-phrenic angle was not as sharp as normal. The hilus glands were increased and showed definite fibrosis with but little evidence of calcification. Definite mottling extended from the hilus into the parenchyma of the lung; both upper and lower lobes were involved. The heart shadow was almost entirely on the left, and the aortic knob was normal. The apex was clear and showed good aeration.

The radiologic diagnosis was chronic pneumoconiosis involving both lungs but more definite on the right side. No demonstrable evidence was obtained of tuberculosis or cavitation.

Samples of dust were gathered from one of the cars while it was being loaded with wheat and from the aforementioned

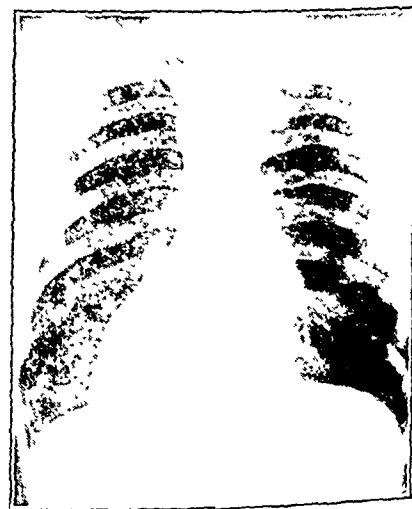


Fig. 2.—Appearance Oct. 18, 1943.

tunnel with the belt conveying wheat, and these were examined chemically and microscopically by one of us (C. R. R.).

The material under examination was found to be composed of whole wheat grains, oat hulls and particles of broken grain. Other particles in the form of finer particles under screen separation were found in the percentages given in table 1.

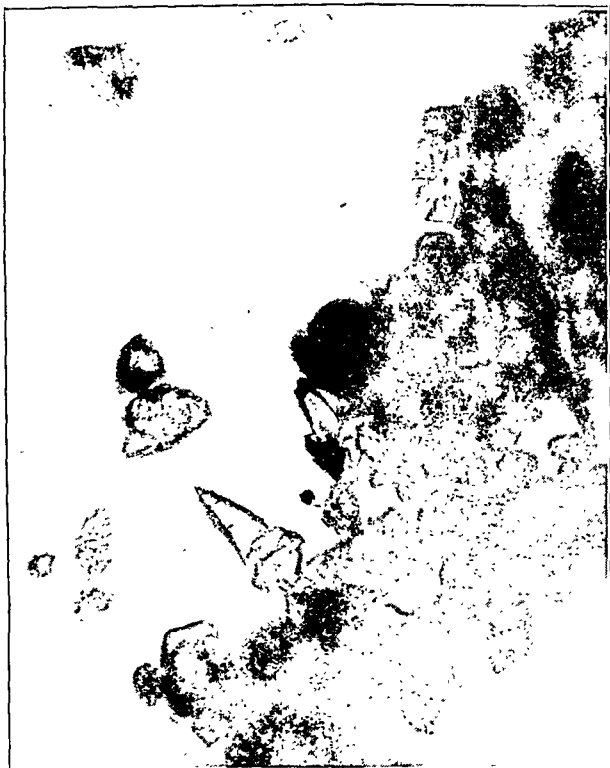


Fig. 3.—Silica from car found passing 325 mesh sieve; $\times 1,000$.

The results of the tests on the dust from the car are given in table 2. The dust from the tunnel was of much the same character but contained a larger percentage of very small particles, no less than 31.55 per cent passing through the 325 (0.044 mm.) mesh; i. e., 31.55 per cent were less than 44 microns in size. The silica content of this dust was 9.96 per cent. In

TABLE 1.—Percentages of Particles

	In Millimeters	Percentage
100 mesh.....	0.147	8.7
150 mesh.....	0.104	4.0
200 mesh.....	0.074	4.0
325 mesh.....	0.044	2.0
Passing 325 mesh.....	0.044	20.24
4.0% between 147 microns and 104 microns		
4.0% between 104 microns and 74 microns		
2.0% between 74 microns and 44 microns		
20.5% from 1 to 44 microns		

both samples the proportion of free silica in the dust rose as the size of the particles fell. It was also observed that the smaller particles were more irregular in shape and had sharper edges than the larger ones.

A second examination was made on Oct. 15, 1943. Comparison of the x-ray films with those of 1941 showed that, without any further exposure to silica-containing dust, the disease had progressed. At neither examination was there any evidence of tuberculosis.

The hilus regions of both lungs showed an increase in density of the fibrous tissue; the lung markings generally showed a hardness compared with former plates. The emphysema was

more pronounced and the heart shadow contour had changed as a result of the changed lung condition.

It was our opinion that the vital capacity of the lungs had been diminished and this patient's emphysema was progressing because of silicotic deposits in the lung tissue.

SUMMARY

A workman employed for eight years in an atmosphere thick with dust from wheat (loading and unloading railway cars) presented a roentgenogram typical of advanced silicosis without evidence of tuberculosis.

TABLE 2.—Dust from the Car

	In Millimeters	Percentage
100 mesh.....	0.147	8.7
150 mesh.....	0.104	4.0
200 mesh.....	0.074	4.0
325 mesh.....	0.044	2.0
Passing 325 mesh.....	0.044	20.25
4.0% between 147 microns and 104 microns		
4.0% between 104 microns and 74 microns		
2.0% between 74 microns and 44 microns		
20.5% from 1 to 44 microns		
Silica found in material collected passing 150 mesh and on 200 mesh.....		
		10.52%
Silica found in material collected passing 200 mesh and on 325 mesh.....		
		16.36%
Silica found in material passing 325 mesh.....		
		19.96%

Examination of the dust gathered at his working places showed that 20.25 and 31.55 per cent of the particles were between 1 and 44 microns in size. The silica content of these particles was 19.96 and 9.96 per cent.

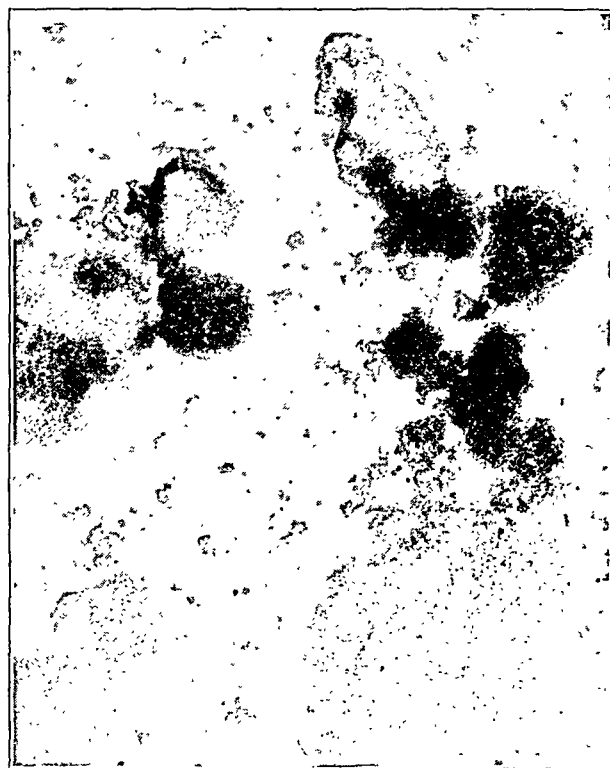


Fig. 4.—Silica from tunnel found passing 325 mesh sieve; $\times 1,000$.

A second examination, made two years later, showed that the fibrotic process in the lungs had progressed, although there had been no further exposure to silica-containing dust.

At present, Jan. 11, 1944, he is completely incapacitated.
1838 Parkwood Avenue.

Special Article**A CLINICAL EVALUATION OF VACCINATION AGAINST INFLUENZA****PRELIMINARY REPORT**

By MEMBERS OF THE COMMISSION ON INFLUENZA, BOARD FOR THE INVESTIGATION AND CONTROL OF INFLUENZA AND OTHER EPIDEMIC DISEASES IN THE ARMY, PREVENTIVE MEDICINE SERVICE, OFFICE OF THE SURGEON GENERAL, UNITED STATES ARMY

In the autumn of 1943 members of the Commission on Influenza, and associates, Board for the Investigation and Control of Influenza and other Epidemic Diseases in the Army, Preventive Medicine Service, Surgeon General's Office, United States Army, undertook with Dr. Thomas Francis Jr., as director, to carry out a controlled clinical trial of the prophylactic efficacy against epidemic influenza of a concentrated, inactivated vaccine containing the viruses of influenza types A and B. Preceding studies had shown that a vaccine similarly prepared was capable of furnishing definite

ately ten times in isotonic solution of sodium chloride following adsorption to, and elution from, the embryonic erythrocytes.² The infectious capacity was inactivated by solution of formaldehyde in a concentration of 1:5,000. Phenyl mercuric nitrate 1:100,000, or borate 1:50,000, was then added for bacteriostatic purposes. The material was bottled in 50 cc. amounts in liquid form. The standard requirements for sterility of bulk and bottled biologic products were met.

Each 1.0 cc. of the vaccine was made up of 0.5 cc. representing type A virus recovered from 5.0 cc. of allantoic fluid and 0.5 cc. representing the type B virus recovered from 5.0 cc. of allantoic fluid. The type A component represented equal parts of the PR8 strain and of the Weiss strain, isolated in May 1943.³ The type B component contained only the Lee strain.

The vaccine was tested by inoculation of mice and eggs to demonstrate that no infectious capacity remained. Its capacities to agglutinate chicken erythrocytes⁴ and to induce immunity in mice after intraperitoneal inoculation were also determined as indicative of antigenic activity.

Control material consisting of isotonic solution of sodium chloride to which solution of formaldehyde

TABLE 1.—Results in Group 1: Cornell University, Ithaca, N. Y., and New York Medical and Dental Colleges

Major Norman Plummer, M. C., A. U. S., and Wilson G. Smittle, M.D., Cornell University Medical College, New York. Dr. Jocelyn Woodman participated in the clinical studies at Ithaca.

Epidemic period: Cornell, 11/23-12/18; New York Medical Colleges, 11/23-12/18/43.

Diagnosis: Patients reporting with temperature of 100 F. or greater. Cases of obviously different origin excluded.

Unit	Date Vaccinated	Number in Study	Cases by Weeks Ending				Total Cases	Incidence, per Cent	Percentage of Total Cases
			11/27	12/4	12/11	12/18			
Cornell University *.....	11/10/43	Vaccinated 498	1	0	1	13	15	3.01	26
		Control 484	2	4	9	28	43	8.88	74
		Total 982					58		
N. Y. Medical and Dental Colls.†..	10/21-11/4/43	Vaccinated 976	1	0	6	7	14	1.43	30
		Control 977	2	6	12	13	33	3.37	70
		Total 1,953					47		

* The incidence 11/23 to 12/6/43 is based to a large extent on questioning, since unit was on furlough during this period.

† These data are considered incomplete. The low incidence is probably related to the difficulty encountered in obtaining proper reporting among the high percentage of men living in private homes.

protection against experimental induction of influenza A or B.¹ The present account constitutes a preliminary clinical evaluation of the influence of vaccination on the incidence of influenza during the epidemic of influenza A which occurred in November and December 1943.

VACCINE

The vaccine was prepared in the laboratories of biologic firms according to specifications furnished by the commission and purchased at minimal cost with commission funds. Virus was obtained from the allantoic fluid of embryonated hen's eggs inoculated forty-eight hours earlier. The virus was concentrated approxi-

1:5,000 and phenyl mercuric nitrate 1:100,000 were added was prepared, bottled and subjected to the same tests for sterility.

THE PLAN OF STUDY

With approval of appropriate authorities, the study was carried out in Army Specialized Training Program units of eight universities in different parts of the United States and in a ninth group comprising the members of Army Specialized Training Program units of five New York medical and dental colleges. Approximately 12,500 men were involved. The populations were highly stable, so that the proportion of men lost from the study was extremely low. In most instances the men were housed as large groups in dormitories.

Vaccine prepared by two different firms was employed in all locations. Except in one unit equal volumes of the two preparations were mixed just before inoculation, so that no selection occurred on this basis. Each

Support and assistance in arranging the studies were furnished by Col. Charles M. Watson, Col. Don C. Hildrup, Col. Herbert C. Gibner and Col. Howard C. Moore, respectively, surgeons of the 2d, 6th, 7th and 9th service commands.

Continued aid and cooperation were furnished by the commanding officers of the different A. S. T. P. units among which the investigations were made, namely Col. Edwin R. Van Deusen, Cornell University; Col. Arthur E. Fox, Princeton University; Lieut. Col. J. D. Cope, Rutgers University; Col. Raymond P. Cook, C. C. N. Y.; Col. Frederick C. Rogers, University of Michigan; Col. Harry King, University of Minnesota; Col. Luke D. Zech, University of Iowa; Col. Francis R. Hunter, Iowa; Col. Luke D. Zech, University of Iowa; Col. William, Columbia University of California; Lieut. Col. Phillip B. Connelly, Cornell Medical College; Capt. Robert Geiss, Long Island Medical College; Major Albert C. Dorat, New York Medical College, and Capt. George F. Dyson, New York University College of Medicine and Dentistry.

1. Francis, T., Jr.; Salk, J. E.; Pearson, H. E., and Brown, P. N.: Protective Effect of Vaccination Against Induced Influenza A, *Proc. Soc. Exper. Biol. & Med.* 55: 104 (Feb.) 1944. Salk, J. E.; Pearson, H. E.; Brown, P. N., and Francis, T., Jr.: Protective Effect of Vaccination Against Induced Influenza B, *ibid.* 55: 106 (Feb.) 1944.

2. Francis, T., Jr., and Salk, J. E.: A Simplified Procedure for the Concentration and Purification of Influenza Virus, *Science* 96: 499-500 (Nov. 27) 1942.

3. Salk, J. E.; Menke, W. J., and Francis, T., Jr.: Identification of Influenza Virus Type A in Current Outbreak of Respiratory Disease, *J. A. M. A.* 124: 93 (Jan. 8) 1944.

4. Hirst, G. K.: The Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination, *J. Exper. Med.* 75: 47-64 (Jan.) 1942.

company or organization within a unit was divided in half, so that alternate individuals received, respectively, vaccine and control material. One dose of 1.0 cc. was given subcutaneously. After vaccination was completed the records containing this information were removed to other quarters, so that on subsequent visits the observer had no information as to whether a patient belonged to the vaccinated or the control group. Indi-

throughout. An effort was made to gain uniformity in the designation of cases by accepting for the diagnosis of influenza those individuals who at the time of reporting to sick call had symptoms suggestive of influenza, i. e. rapid onset with mild upper respiratory complaints, chilliness, aches and prostration and were admitted to hospital with sublingual temperatures of 100 F. or more without obvious evidence of other disease. Fresh typical

TABLE 2.—Results in Group 2: Princeton University, Princeton, N. J., Rutgers University, New Brunswick, N. J., and College of City of New York

George K. Hurst, M.D., Major Norman Plummer, M. O., A. U. S., and William F. Friedewald, M.D., Laboratories of International Health Division, Rockefeller Foundation, New York

Epidemic periods: Princeton, 11/28-12/18/43; Rutgers, 11/22-12/18/43; C. C. N. Y., 11/7-12/18/43

Diagnosis: Patients reporting with respiratory infection and temperature of 100 F. in whom diagnosis of some other disease could not definitely be made.

Unit	Date Vaccinated	Number in Study	Cases by Weeks Ending				Total Cases	Incidence, per Cent	Percentage of Total Cases
			11/27	12/4	12/11	12/18			
Princeton	11/2/43	Vaccinated 590	0	8	6	3	17	2.88	27
		Control 560	0	21	17	7	45	8.04	73
		Total 1,150					62		
Rutgers	11/1/43	Vaccinated 606	2	0	0	5	7	1.16	14
		Control 606	4	8	20	9	41	6.77	86
		Total 1,212					48		
C. C. N. Y.	11/19/43	Vaccinated 1,000	33	8	6	0	44*	1.33	16
		Control 1,055	27	52	17	6	102*	7.11	84
		Total 2,105					146*		

* Because influenza began about the time vaccination was done, figures represent only those cases which occurred on or after the ninth post-vaccination day. The number of cases indicated for the week ended November 27 include all occurring during the period from November 7 to November 27.

TABLE 3.—Results in Group 3: University of Michigan, Ann Arbor

Jonas E. Salk, M.D., and Wilbur J. Menke, M.D., Department of Epidemiology, School of Public Health, University of Michigan

Epidemic periods: First case 11/12/43 Epidemic peak 11/20-12/4/43

Diagnosis: Clinical diagnosis of influenza at time of reporting on sick call, temperature of 100 F. or more and admitted to hospital.

Unit	Date Vaccinated	Number in Study	Cases by Weeks Ending					Total Cases	Incidence, per Cent	Percentage of Total Cases
			11/20	11/27	12/4	12/11	12/18			
University of Michigan	10/26-11/2/43	Vaccinated 888	0	5	2	6	7	20	2.29	21
		Control 888	8	17	36	5	8	74	8.51	79
		Total 1,776						94		

First case on 11/12/43 was not in study group

TABLE 4.—Results in Group 4: University of Minnesota, Minneapolis

E. R. Rickard, M.D., Minnie Thigpen, B.S., and James H. Crowley, B.A., Influenza Laboratory, Division of Preventable Diseases, Minnesota Department of Health, Minneapolis. This study was aided by a grant from the International Health Division of the Rockefeller Foundation

Epidemic period: 11/21/43-12/13/43.

Diagnosis: Reporting to sick call with respiratory illness and admitted with temperature of 99 F. or more

Unit	Date Vaccinated	Number in Study	Cases by Weeks Ending				Total Cases	Incidence, per Cent	Percentage of Total Cases
			11/27	12/4	12/11	12/18			
University of Minnesota	11/5-11/13/43	Vaccinated 599	7	4	4	1	16	2.69	22.5
		Control 607	35	10	7	3	55	9.06	77.5
		Total 1,206					71		

Cases of influenza were not noted in any dormitory housing inoculated students until at least eleven days after vaccination of the group housed in that dormitory.

viduals who did not receive inoculation of control material were not considered controls. Vaccination was carried out at different times in the various units but in the main was completed by the middle of November. After the group had been vaccinated, new arrivals were not taken into the study. The time of vaccination in relation to the recognized onset of influenza is seen in the subsequent data.

Prior to vaccination and throughout the period thereafter, close observation of all individuals reporting to sick call was maintained by members of the investigating groups. The same type of record card was used

common colds, characteristic follicular tonsillitis and infectious mononucleosis were excluded from the diagnosis of influenza. Owing to local regulations or facilities, certain variations in the requirements for admission to hospital were encountered. In general, however, it appears that the criteria adopted would tend more to the inclusion in the series of cases which were not influenza than to the exclusion of cases which were influenza. While extensive collections of materials for virus and serologic investigation were made, the clinical impressions here stated have not been modified or corrected by any such data.

An epidemic of influenza A was first identified in the Middle West about the second week in November. The disease was subsequently recognized in other localities within a short time thereafter. The epidemic period in the posts under observation was three to four weeks. The disease was, in general, mild, of three to four days' duration and with a low incidence of complications.

The accompanying data represent tabulations of cases called influenza at the time of illness. The designation

cent, while in the 6,263 receiving vaccine there was an incidence of 2.22 per cent, a ratio of 3.2 to 1.

The significance of the results is heightened by the uniformity of trend in practically all instances. The two greatest deviations are noted in the medical school units and in California. In the former the low incidence of the disease is thought to be related to the lack of central reporting. In the latter instance there is no clear difference between control and vaccinated groups; various factors such as furlough, the increased interval since

TABLE 5.—Results in Group 5: University of Iowa, Iowa City

William M. Hale, M.D., with technical assistance of Mr. Earl J. Gifford, Department of Bacteriology, University of Iowa, Iowa City.

Epidemic period: 11/29-12/25/43.

Diagnosis: Cases with diagnosis of influenza, most all with temperatures of 100 F. or more.

Unit	Date Vaccinated	Number in Study	Cases by Weeks Ending				Total Cases	Incidence, per Cent	Percentage of Total Cases
			12/11	12/18	12/25	1/1/44			
University of Iowa.....	12/2-12/1/43	Vaccinated	589	(9) 3	2	4	11	1.83	21
		Control	690	(11) 12	16	11	40	6.67	79
		Total	1,198				51		

Five cases before vaccination completed. Summarized totals exclude the cases occurring in the first five days following vaccination. Numbers in parentheses indicate those occurring in the first five days. Hemolytic streptococcus pharyngitis occurred concurrently with the outbreak of influenza. Twenty per cent of throat cultures were positive for B. hemolytic streptococcus.

TABLE 6.—Results in Group 6: University of California, Berkeley

Monroe D. Eaton, M.D., and Gordon Melkjohn, M.D. Research Laboratory of the California Department of Public Health, Berkeley, Calif. This study was aided by a grant from the International Health Division of the Rockefeller Foundation.

Epidemic period: 11/26/43-1/15/44.

Diagnosis: All cases hospitalized with acute febrile respiratory disease.

Cases by Weeks Ending												Incidence, per Cent	% of Total
Unit	Date Vaccinated	Number In Study	12/3	12/10	12/17	12/24	12/31	1/7/44	1/15	Total Cases			
University of California.....	10/19-10/27/43	Vaccinated	457	1	1	5	8	4	1	4	24	5.25	41
		Control	435	3	1	10	6	3	4	8	34	7.81	59
		Total	892								58		

About 10 cases of streptococcal infection including 2 with scarlet fever occurred during the influenza epidemic.

The unit was on furlough 12/4 to 12/12/43. A few were away 12/22 to 12/28/43.

TABLE 7.—Summary of Clinical Evaluation of Vaccination Against Influenza
The combined totals of all results.

Group	Service Command	ASTP Unit	Dates of Vaccinated	Total Number	Number of Subjects		Number of Cases		Incidence, per Cent		Percentage of Total Cases	
					Vaccinated	Control	Vaccinated	Control	Vaccinated	Control	Vaccinated	Control
1	2d	Cornell.....	11/9	982	498	484	15	43	3.01	8.89	26	74
	2d	N. Y. Med. Schools	10/26-11/4	1,933	976	977	14	33	1.43	3.38	30	70
2	2d	Princeton.....	11/2	1,150	690	660	17	46	2.88	8.20	27	73
	2d	Rutgers.....	11/1	1,212	606	606	7	42	1.15	6.93	14	86
3	2d	C. C. N. Y.	11/10	2,105	1,050	1,055	14	75	1.33	7.10	16	84
	6th	Michigan.....	10/26-11/2	1,776	888	888	20	74	2.25	8.35	21	79
4	7th	Minnesota.....	11/5-11/13	1,206	599	607	16	55	2.68	9.06	22	78
	7th	Iowa.....	12/2-12/4	1,198	699	699	11	40	1.83	6.67	21	79
5	7th	California.....	10/19-10/27	892	457	435	24	34	5.25	7.80	41	59
	9th											
Totals.....				12,474	6,263	6,211	138	442	2.22	7.11	23.8	76.2

has been made purely on clinical grounds without reference to serologic or other virus studies for identification of individual cases. The division according to vaccinated or control was not done until the epidemic period was thought to have been passed. The results for the respective units were compiled by the investigating teams and, in all but 1 instance, a report was submitted to the Office of the Surgeon General of the Army before the evidence obtained in other locations was known.

It is seen that the incidence of clinical influenza in the 6,211 men receiving control material was 7.11 per

vaccination and the protracted incidence of disease may be involved, but no single explanation is offered at present. When these two pronounced deviations are excluded, the ratio of influenza in controls to influenza in vaccinated is 4 to 1. In some of the units, ratios of 5 or 6 to 1 were recorded.

It is of interest to note also that, in general, the difference between vaccinated and control individuals was greatest at the height of the epidemic curve and as the epidemic subsided the differential was less marked.

The results at the College of the City of New York and at Iowa, where vaccination was begun after the

epidemic was in progress, indicate that the effect of vaccine becomes evident in about one week after inoculation. In these instances the attack rates in the vaccinated and controls were not especially different during the first week but then diverged sharply. The duration of the effect is not known.

In this brief report no consideration is given to the results of serologic and virus studies which are under way and which will be incorporated in a subsequent complete report.

SUMMARY

The influence of subcutaneous inoculation of a concentrated inactivated vaccine on the incidence of clinical influenza in a series of Army Specialized Training Program units comprising approximately 12,500 men was studied during the recent epidemic of influenza A. Vaccination done shortly before or even after the onset of the epidemic was found to exert a protective effect with a total attack rate of 2.22 per cent among the 6,263 vaccinated and 7.11 per cent among the 6,211 controls, a ratio of 1 to 3.2. The influence of vaccine was most clearly evident at the height of the epidemic prevalences. The duration of the effect has not been determined.

Office of the Influenza Commission, School of Public Health,
University of Michigan, Ann Arbor, Mich.

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS AND NUTRITION OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

GEORGE K. ANDERSON, M.D., Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (See Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Inc., Canajoharie, N. Y.

BEECH-NUT BRAND STRAINED VEGETABLES AND BEEF, WITH RICE AND BARLEY.

Analysis (submitted by manufacturer).—Total solids 13.95%, moisture (by difference) 86.05%, ash 1.25%, fat (ether extract) 0.56%, protein ($N \times 6.25$) 2.91%, crude fiber 0.48%, carbohydrates other than crude fiber (by difference) 8.75%, calcium (as Ca) 0.03%, phosphorus (as P) 0.04%, iron total 7.8 parts per million, iron total available 7.3 parts per million, copper 3.1 parts per million.

Calories.—0.52 per gram; 14.74 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED APPLE SAUCE.

Analysis (submitted by manufacturer).—Total moisture 85.49%, total solids 14.51%, total ash 0.32%, nitrogen 0.02%, protein ($N \times 6.25$) 0.12%, crude fiber 0.46%, fat (ether extract) 0.02%, salt (as NaCl) 0.18%, total carbohydrates (by difference) 13.59%, calcium 2.18 mg. per hundred grams, copper 0.218 mg. per hundred grams, iron 0.30 mg. per hundred grams, phosphorus 6.22 mg. per hundred grams, lead 0.64 part per million.

Calories.—0.55 per gram; 15.62 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED BEETS.

Analysis (submitted by manufacturer).—Total solids 10.25%, total moisture 89.75%, total ash 1.29%, nitrogen 0.163%, protein 1.02%, crude fiber 0.478%, fat 0.004%, carbohydrates (by difference) 7.458%, calcium 17.36 mg. per hundred grams, copper 0.145 mg. per hundred grams, iron 1.065 mg. per hundred grams, phosphorus 34.76 mg. per hundred grams.

Calories.—0.34 per gram; 9.63 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED PEACHES.

Analysis (submitted by manufacturer).—Total solids 15.22%, total ash 0.33%, total moisture 84.78%, nitrogen 0.07%, protein ($N \times 6.25$) 0.44%, crude fiber 0.34%, fat 0.01%, carbohydrates (by difference) 13.17%, salt (as NaCl) 0.15%, calcium 5.5 mg. per hundred grams, copper, 0.20 mg. per hundred grams, iron 1.01 mg. per hundred grams, phosphorus 20.40 mg. per hundred grams.

Calories.—0.58 per gram; 16.55 per ounce.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

TYROTHRIN.—An extract, first isolated by Dubos, obtained from *Bacillus brevis*, a gram-positive, aerobic, spore-forming soil organism. Tyrothricin possesses antibacterial action against several species of gram-positive organisms.

Actions and Uses.—Tyrothricin consists of at least two substances, gramicidin and tyrocidin, the former agent being by far the more active component. It seems not unlikely that some of the earlier reports which were claimed to be based on the use of gramicidin were actually concerned with the mixture. Included in the organisms that show some degree of susceptibility are species of pneumococci, streptococci and staphylococci. Its action on bacteria appears to consist, at least in part, of inhibiting enzymatic action, retarding growth and causing lysis of the bacteria against which it is effective. Its standardization is determined at present by the protection afforded mice infected with pneumococci administered intraperitoneally.

Tyrothricin should be applied locally. It is ineffective when administered orally and is ineffective and dangerous when given intravenously. It has been reported to be of value in the treatment of superficial indolent ulcers, the predominating organism of which is gram positive, mastoiditis, empyema and some other wound infections. Its field of usefulness is limited and it appears to exert no effect unless it can come in direct contact with the organisms. Thus it may not exert much effect in the presence of deep-seated infections. Body fluids such as saliva, urine and serum offer a slight inhibiting action, whereas substances from gram-negative organisms are decidedly inhibiting.

It may be used with caution in body cavities as long as there is no direct connection with the blood stream. But in no instance should proper surgical treatment be ignored when it is indicated. It should be remembered that, although tyrothricin appears to have a field of usefulness in medicine, its use is still in an experimental stage and much work remains to be done before its true status is established and final comparisons can be made with other antibiotics and anti-infective agents in general.

Dosage.—Tyrothricin must be applied locally, *not intravenously or by mouth*. It is administered after diluting with sterile distilled water to form an isotonic solution in a concentration which yields 500 micrograms of the drug per cubic centimeter. This concentration is usually effective against the infecting organism, although higher concentrations may be used if indicated. However, higher concentrations may be irritating to the tissues.

SHARP & DOHME, INC., PHILADELPHIA

Tyrothricin Concentrate: 1 cc. ampul of a solution of tyrothricin, 25 mg. per cubic centimeter, accompanied by a vial containing 49 cc. of sterile distilled water which contains phenylmercuric borate in a concentration of 1:50,000; 20 cc. ampul of a solution of tyrothricin, 25 mg. per cubic centimeter, not accompanied by a diluent.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1943, p. 401).

The following additional dosage form has been accepted:
THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Ampul Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3%: 10 cc. Each cubic centimeter contains the equivalent of 20,000 international units of estrone. Three per cent benzyl alcohol added as a preservative.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1943, p. 356).

The following dosage form has been accepted:

CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N. Y.

Ampul Solution Aminophylline: 0.48 Gm. in 2 cc. and 0.24 Gm. in 10 cc.

VIOFORM (See New and Nonofficial Remedies, 1943, p. 121).

The following additional dosage form has been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Vioform Insufflate: 8 ounce bottles.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 1, 1944

DIETARY DEFICIENCY AND POLIOMYELITIS

Clinicians generally agree that a deficiency in vitamins or other essential food elements usually results in a lowered natural resistance to bacterial infections. There is reason to believe that this hyp immunity is largely due to a reduction in phagocytic functions.¹ In contrast with this general agreement the effect of similar nutritional deficiencies on antiviral resistance is still controversial. McCormick,² for example, reported that the diets of victims of infantile paralysis are frequently low in thiamine. He obtained good results in paralytic cases by administering rather large amounts of thiamine. Exactly opposite conclusions were drawn by Ward,³ who found that thiamine excretion in children with paralytic poliomyelitis does not differ from that of normal children. He believes that thiamine nutrition is not a determining factor in poliomyelitis.

Similar contradictions have resulted from a study of experimental poliomyelitis. Working with monkeys, Jungeblut⁴ found that the incidence of paralysis could be reduced by the administration of rather large doses of vitamin C, while Sabin⁵ could not obtain protection from vitamin C therapy. Toomey⁶ found that vitamin D gave almost complete protection when the infective dose of poliomyelitis virus was injected directly into an exposed loop of the intestine of monkeys. Sabin⁷ found that vitamin D did not afford protection under similar conditions and that rachitic monkeys are not more susceptible to experimental poliomyelitis than normal controls.

A new basic theory of the relationship of nutritional factors to virus infection was suggested by Rivers,⁸

Sprunt⁹ and others, who found that rabbits on a starvation diet are more resistant to vaccinia virus than adequately fed controls. Bloomfield and Lew¹⁰ found that vitamin B deficiency protected animals against spontaneous ulcerative cecitis, which was prevalent in their laboratory among animals on adequate diets. Rasmussen¹¹ and his associates of the University of Wisconsin applied this new lead by testing the effects of thiamine deficiency on resistance to poliomyelitis in mice. One group of 35 mice was maintained on a thiamine deficient diet, with 35 controls fed at the presumably optimum thiamine level. Both groups were inoculated intracerebrally with 0.03 cc. of a 2 per cent suspension of Lansing mouse passage poliomyelitis virus. By the fourteenth day 25 of the mice maintained at the optimal thiamine level had developed paralysis. None of the mice on the thiamine deficient diet showed paralytic symptoms. Thiamine deficiency therefore apparently conferred an almost complete poliomyelitis immunity.

This seeming paradox is currently studied in greater detail by Foster and her associates¹² of the Department of Pediatrics, University of Pennsylvania School of Medicine. In a typical experiment two groups of mice were placed for twenty days on diets differing only in thiamine content. The control diet contained 100 mg. of thiamine per hundred grams of food, while the deficiency diet contained but 10 mg. of thiamine per hundred grams. This amount was increased slightly with the onset of signs of thiamine deficiency. Of 79 mice on the high thiamine diet, 60 (75 per cent) developed paralysis by the twenty-first day after intracerebral inoculation with a ten to one hundred 50 per cent mortality dose of the Lansing strain of poliomyelitis virus. Of 77 mice on the thiamine deficient diet only 7 (9 per cent) showed signs of paralysis. Both mortality rate and incidence of paralysis were much lower in the vitamin deficient group.

Since one of the characteristics of thiamine deficiency is loss of appetite with a concomitant decrease in consumption of food, the effect of a simple restriction of daily food intake was tested on 276 mice. Each animal on the restricted diet was given 1 Gm. of food daily, which is about 40 per cent of the normal food consumption. In many of the groups extra thiamine was given in the restricted diet to compensate for thiamine deficiency. The results were similar to those obtained with the earlier thiamine deficient groups. Restriction of caloric intake resulted mainly in a delayed development of paralysis, with a slighter reduction in mortality rate.

1. Cottingham, E., and Mills, C. A.: *J. Immunol.* **47**: 493, 1943.
2. McCormick, W. J.: *M. Rec.* **150**: 303, 1939.
3. Ward, R.; Sabin, A. B.; Najjar, V. A., and Holt, L. E., Jr.: *J. Bact.* **45**: 86, 1943.
4. Jungeblut, C. W.: *J. Exper. Med.* **66**: 459, 1937.
5. Sabin, A. B.: *J. Exper. Med.* **69**: 507, 1939.
6. Toomey, J. A.: *Ingestion of Vitamins A, B, C and D and Poliomyelitis*, *Am. J. Dis. Child.* **53**: 1202 (May) 1937.
7. Sabin, A. B.; Ward, R.; Rapoport, S., and Guest, G. M.: *Proc. Soc. Exper. Biol. & Med.* **48**: 451, 1941.
8. Rivers, T. M.: *Infantile Paralysis*, New York, National Foundation for Infantile Paralysis, Inc., 1941.

9. Sprunt, D. H.: *J. Exper. Med.* **75**: 297, 1942.
10. Bloomfield, A. L., and Lew, W.: *J. Nutrition* **25**: 427, 1943.
11. Rasmussen, A. F.; Waismann, H. A.; Elvehjem, C. A., and Clark, P. F.: *J. Bact.* **45**: 85, 1943.
12. Foster, C.; Jones, J. H.; Henle, W., and Dufman, F.: *J. Exper. Med.* **79**: 221 (Feb.) 1944.

As early as 1911 Rous¹³ noted that undernourished chickens are relatively resistant to sarcoma virus. Tannenbaum¹⁴ found that in mice restriction in such essential food components as proteins, vitamins, minerals or fats, as well as simple restriction of caloric intake, increases normal cancer resistance. Bischoff¹⁵ found that in mice a deficiency in pyridoxine (B_6) produces a significant decrease in rate of growth of tumors. The immunizing effect of thiamine deficiency against poliomyelitis virus is thus not an isolated phenomenon but an immunologic reaction operative against other viruses and against tumor cells.

Several plausible theories to account for this phenomenon have been suggested by the Philadelphia pediatricians. Probably the simplest theory is the assumption that the vitamin and other nutritional requirements of a virus are greater or more exact than those of the bacterial cell, an intermediary position being occupied by the normal tissue cell. With a reduced vitamin or caloric intake the multiplication of the virus would first be inhibited without appreciable tissue starvation, giving a seeming increase in natural resistance. Further reduction in nutritional factors would reduce phagocytic activity without inhibiting the normal rate of bacterial growth, with a resulting real decrease in bacterial resistance. Work is being continued along lines suggested by these theories.

RECONDITIONING CONFERENCE AT SCHICK GENERAL HOSPITAL

A sound program for the reconditioning of disabled soldiers, recently announced by the Surgeon General of the Army, was given great impetus in a two day conference held at the Schick General Hospital, Clinton, Iowa, in March. Medical Corps officers and others in attendance were impressed by the scientific approach to the problem. An enthusiastic execution of a realistic reconditioning program during the past several months at Schick General Hospital by its commandant, Col. Dean F. Winn, M. C., and his staff clearly demonstrated the great possibilities of an early return to duty of many disabled soldiers. A first hand opportunity to observe the operation of the plan was afforded by the ward walks and demonstration clinics, and visiting officers were given every opportunity to interrogate patients, trainees, wardmasters, nurses, medical officers and others concerned with the program.

The presence of high ranking Army officers, representatives of the Office of the Surgeon General and members of the War Department General Staff was

indicative of the vital interest of the Army in the successful operation of the plan. Emphasis is placed on the effort to utilize to the fullest extent possible the manpower of the Army. Major Gen. Ray E. Porter, assistant chief of staff, general staff, pointed out that the cream of the nation's crop of young manhood are now in the Army. Young men who will come to the medical department for reconditioning are for the most part trained soldiers who must be quickly restored to military duty or useful civilian occupations. "Every one of them you lose for the Army, every day that one of them remains away from duty longer than is absolutely necessary to his full recovery, is a damning charge against all of us and an irreparable loss to our cause."

Reconditioning, though not a new concept to physicians, has been carefully planned to include all phases of the problem. Last year the Surgeon General, after a thorough study of the problem, created a new division in his office, the Reconditioning Division, and appointed Col. Augustus Thorndike, M. C., as its director. Colonel Thorndike was formerly physician to Harvard, where he had practical experience with athletes. He is the author of a well known book dealing with the care of injuries of athletes and is singularly fitted for the new post. Training for men to be returned to duty as the result of the reconditioning program includes physical reconditioning, educational reconditioning and emotional reconditioning. Physical exercises are begun at the earliest possible time. In many instances they are done while the patient is still in bed; however, in every case they are prescribed by the medical officer in charge of the ward. Strict supervision of the program is maintained by medical officers of the professional services who are responsible for the care of the soldiers. Much of the physical training program is carried out by nonprofessional officers and enlisted men under the direction of medical officers. A graduated system of calisthenics, drills, games and military training is the basis of physical reconditioning. Concurrently, equally well planned programs for educational and emotional reconditioning are carried out by competent personnel. Not only is the disabled soldier to be returned to duty wherever possible physically fit, but the program also calls for such reconditioning as will return him "a tough, seasoned soldier with an aggressive combat spirit."

Here is a challenge to the medical profession to restore as many of the nation's sick and wounded soldiers to duty as early as possible. Sound practical plans including competent personnel and adequate materials have been authorized. The ultimate success of the plan, however, rests with the individual medical officer, whose judgment in each soldier's welfare should rest on accepted scientific principles.

13. Rous, P.: *J. Exper. Med.* **13**: 397, 1911.

14. Tannenbaum, A.: *Am. J. Cancer* **38**: 335, 1940; *Cancer Res.* **2**: 460, 1942.

15. Bischoff, F.; Ingraham, L. P., and Rapp, J. J.: Influence of Vitamin B_6 and Pantothenic Acid on Growth of Sarcoma 180, *Arch. Path.* **35**: 713 (May) 1943.

SYMPATOL-STEARN'S—A TRIUMPH OF MEDICAL MISINFORMATION FOR PHYSICIANS

In recent issues of some pharmaceutical and medical periodicals—not too careful about the scientific evidence in support of the claims made—advertisements with the caption “A Standby of European Physicians Comes to America—Sympatol, a *Safe* Circulatory Stimulant.” Embellishing this statement is an artistic presentation of a schematic world map with a broad arrow emanating from a point due west of the Rock of Gibraltar somewhere in the Atlantic Ocean and ending above “Sympatol.” Below this broadside the reader is informed in part:

With the presentation of this renowned European professional product, Stearns fills a widely recognized need of American medicine. For Sympatol is a *safe* circulatory stimulant—free from adverse side reactions on heart and nerves.

As attested by twenty years' experience of leading continental doctors, the bracing, prolonged, tonic effects of Sympatol may be safely employed—with marked benefits—in nearly all cases of low blood pressure . . . during convalescence from colds and “flu” . . . in hypothyroidism and the menopause . . . for “toning up” pale, listless children. This abbreviated list will indicate why Sympatol is regarded, in Europe, as almost indispensable.

If the advertising is to be believed, the “Indications suggesting this circulatory stimulant cover all general debilitated states, which include patients convalescing from colds and ‘flu,’ ‘arrested’ tuberculosis, women in the menopause, listless rundown children, hypothyroids and similar conditions.”

Now the simple plain fact is that Sympatol has been known on the American continent for many years. In 1929 Frederick Stearns & Company presented “*paramethylamino-ethanolphenol hydrochloride*” to the Council on Pharmacy and Chemistry as Sympatol. Subsequently (1930) the Council voted to accept Sympatol with certain provisions, not under this name but under the term Synephrin. Shortly thereafter the firm presented Synephrin Tartrate, described as “the normal tartrate of the synthetic alkaloid Synephrin, *p*-hydroxyphenylmethylaminoethanol.” It will be noted that the latter chemical designation indicates the same base as that which originally bore the name Sympatol. In 1933 the Council gave consideration to a product of Frederick Stearns & Company named Neo-Synephrine, one chemical name for which was stated to be “*levo-methylaminoethanolphenol hydrochloride*”; this product was claimed to represent an improvement over the previously accepted product. The Council voted to accept Neo-Synephrine Hydrochloride for inclusion in New and Nonofficial Remedies and published a statement which appears in the Annual Reports of the Council on Pharmacy and Chemistry, 1934, to the effect that Synephrin Tartrate had been omitted from New and Nonofficial Remedies, but the firm was going

to conduct investigations to “ascertain whether or not it [Synephrin Tartrate] is of clinical value in the treatment of cardiovascular disorders.” The current advertising for Sympatol obviously omits reference to the fact that the product was available on the American market over ten years ago. The reader is led to believe that he is offered something new, something wonderful, something that has been the standby of European medicine. He is also led to believe that this product has been established as a stimulant for a wide variety of conditions; the Council has not received any evidence in substantiation since 1933.

Current Comment

MEDICAL TESTIMONY IN MINNESOTA

Three years ago the Minnesota State Medical Association created a Committee on Medical Testimony to which courts and others may refer instances in which physicians have given questionable medical testimony. The committee, after investigation and if the facts warrant it, may censure the physician, may publicize the circumstances of the particular case or may bring the matter to the attention of the state board of medical examiners for disciplinary action. This experiment has been watched with interest by all who are concerned with finding solutions to the problem of medical expert testimony. Recently the Committee on Medical Testimony referred to the board of medical examiners the case of a physician who had testified as an expert witness for an accused charged with murder. Both the committee and the board concluded that the testimony in question was unjustified. The board found, however, that neither perjury nor monetary gain was a factor in the giving of the testimony, and for that reason the license of the physician was not suspended or revoked. He was censured. In reaching its decision in this case, the board said:

This board is of the opinion that no physician has a right to practice medicine just as he pleases, nor to testify in court in a similar fashion. We believe that a physician's testimony should be based upon a factual background that has been carefully scrutinized by the physician before he expresses his opinion. This opinion should be reasonable and surrounded by every mark of truthfulness and sincerity. Under those circumstances the opinion is of value to courts and juries alike. The scrutiny required is all the greater where the defendant is on trial for murder and the history of any physical or mental abnormalities is furnished by the defendant or some one close to him.

Next to saving life and giving aid to the sick and injured no greater responsibility devolves on the medical profession than giving testimony in court or elsewhere. The right of a physician to continue in the practice of medicine is measured not only by his professional competence as a physician but also by what he says and does as a physician.

EFFICACY OF VACCINATION AGAINST YELLOW FEVER

Previous investigations have shown that mass vaccination of human beings against yellow fever with the attenuated strain of yellow fever virus known as 17D is an effective method of producing immunity. This virus has become available for widespread clinical trial comparatively recently, and only now is the duration of immunity attained susceptible of evaluation. Bugher and Gast-Galvis,¹ who studied the efficacy of yellow fever vaccination in Colombia, report that there has been only 1 recognized case of yellow fever among over 600,000 persons vaccinated with the 17D strain. A boy had been inoculated only five days before becoming ill; consequently he was apparently in the incubation period of the disease at the time of inoculation and could not have been expected to produce demonstrable antibodies in time to ward off the disease. In contrast to this extraordinary record, 198 proved and 45 probable cases were recognized among unvaccinated persons from 1937 to 1943, the former year being that in which vaccination was begun. A large number of these cases, furthermore, occurred in known endemic areas in which over 90 per cent of the population had been vaccinated. These observations are crucial: yellow fever continued to appear in the small unvaccinated fraction while disappearing among those inoculated. Cases of the disease were continuing to appear in the unvaccinated minority during 1941 and 1942. On clinical grounds it can be concluded, therefore, that effective immunity from vaccination with the 17D strain persists for at least four years. Since there has not been any clinical evidence of a break in the protection at the end of four years, immunity will probably continue for an unknown further period.

ROCKEFELLER FOUNDATION IN 1943

Especially noteworthy in President Fosdick's review¹ of the work of the Rockefeller Foundation in 1943 is the part played by the foundation's grants in the development of penicillin. Thus it is reported that grants have been made since 1936 to Dr. H. W. Florey at Oxford for investigations to be carried out by him and his colleagues on this substance. The foundation has given uninterrupted support to Svedberg's work on proteins at the University of Uppsala and to Runnström's research in chemical physiology and embryology at the University of Stockholm. In Switzerland the foundation has made grants for research in biochemistry, biophysics and neurophysiology. Keeping alive the flame is an uphill fight, however; as Fosdick says, "Laboratories surrounded by barbed wire are ugly monuments to the intellectual and moral distortion of our times." Other matters of importance discussed in this report deal with the return of the gambiae mosquito to Brazil—apparently brought by plane from

Accra and Dakar in Africa to Natal—the reopening of the foundation's laboratory in Lagos, West Africa, for the study of the epidemiology of yellow fever, and vitally important investigations on typhus. Scientific as well as personal tragedy is abroad in the world: At the fall of Manila the Japanese looted the foundation's office and destroyed all records; in China Dr. Henry S. Houghton, director of the Peiping Union Medical College, and Mr. Trevor Bowen, its comptroller, are still imprisoned with little hope for their early return, while the buildings of the college have been taken over by the military and the greater part of their contents removed. When return to the blacked out areas of the world is again possible, the Rockefeller Foundation will doubtless appear in the forefront of the agencies seeking to restore the bases of civilization.

U. S. P. VITAMIN MIXTURES

The value of vitamin mixtures in multiple vitamin deficiencies is well established. Numerous communications have provided much information on the administration of these mixtures; the Council on Pharmacy and Chemistry has outlined the type of mixtures¹ that will be found acceptable for inclusion in New and Nonofficial Remedies. Two such vitamin mixtures, Hexavitamin and Triasyn B in capsules and tablets, are described in the first bound supplement to U. S. P. XII. Hexavitamin contains vitamin A from natural (animal) sources, vitamin D from natural (animal) sources or as activated ergosterol or activated 7-dehydrocholesterol, ascorbic acid, thiamine hydrochloride, riboflavin and nicotinamide. Triasyn B consists of thiamine hydrochloride, riboflavin and nicotinamide. For those who desire therapeutically effective vitamin mixtures not disguised by a multiplicity of nonrevealing and frequently therapeutically suggestive names, Hexavitamin and Triasyn B are important additions to U. S. P. XII. The next step will be for the physician to prescribe such compounds for his patients so that they may be obtained from the pharmacist.

RABID FOXES IN MARYLAND

According to newspaper report, rabies has broken out in near epidemic proportions among foxes in Maryland. In several cases rabid foxes have attacked human beings: a railroad trainman, a farmer and a bus driver have been specifically mentioned. Twelve soldiers at Fort Meade, Maryland, were given treatment for the prevention of rabies after one of the post's puppy mascots had been infected. The state game warden has declared an open season on fox hunting, subject to the local laws in eleven counties which have regulations protecting these animals. In this case the ancient sport of fox hunting and public health prophylaxis seem to go hand in hand.

1. Bugher, John C., and Gast-Galvis, Augusto: The Efficacy of Vaccination in the Prevention of Yellow Fever in Colombia, *Am. J. Hyg.* 39: 58 (Jan.) 1944.

1. Fosdick, Raymond B.: The Rockefeller Foundation: Review of Work in 1943

1. The Proper Use of Vitamins in Mixtures, a Report of the Council on Pharmacy and Chemistry and Council on Foods and Nutrition, *J. A. M. A.* 119: 948 (July 18) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

MILITARY MOBILIZATION AND TUBERCULOSIS CONTROL

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MEDICAL CORPS, ARMY OF THE UNITED STATES

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MEDICAL CORPS, ARMY OF THE UNITED STATES,
VETERANS ADMINISTRATION

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U. S. PUBLIC HEALTH SERVICE

Colonel Leonard G. Rowntree
MEDICAL RESERVE, SELECTIVE SERVICE SYSTEM

The current military mobilization, which requires preinduction physical examination, has furnished a unique opportunity to promote national tuberculosis control. The following paragraphs indicate the manner in which advantage is taken of the opportunity through the combined efforts of the Selective Service System, the Army, the Navy, the U. S. Public Health Service and the Veterans Administration.

REJECTION FROM MILITARY SERVICE

In normal procedure men selected through the operation of the Selective Service System are sent to an armed forces induction station, jointly controlled by the Army and Navy, where they are given a physical and x-ray examination of the chest in the course of a complete physical examination. X-ray examination is ordinarily by the method of photoroentgenography, with stereoscopic 4 by 5 inch films; whenever there is reason, however, to supplement this rapid method by further x-ray observation, examination with full size films is made.

The standards for acceptance for military service are specified in Army and Navy regulations. They require exclusion of all active tuberculosis, and all latent tuberculosis that might be reactivated under military conditions. They permit acceptance of small well scarred tuberculous lesions, limited to densely calcified residues of childhood disease, or minimal strandlike remains of tuberculosis of reinfection type after repeated examination has indicated stability of the lesion. Men who fail to meet the standards are rejected, and notification of the cause of rejection is made on the Selective Service System form (DSS Form 221) accompanying each man. Men who meet the standards are forwarded at a later date to an Army reception center or Navy training station for induction and military duty.

FOLLOW-UP OF REJECTED MEN

The Selective Service System has taken measures to refer men rejected for tuberculosis to state public health agencies for follow-up with a view to isolating open cases, finding new cases among contacts and instituting suitable supervision of all contacts. The first steps in this direction were made in May 1942, when the director of the Selective Service System issued instruction to all local boards making provision whereby x-ray films of men rejected for military service because of nonremediable chest disease could, within the discretion of the state director of the Selective Service System, be delivered to state health officers for public health purposes. Subsequent arrangements for reporting cases of tuberculosis and at the same time furnishing the films of rejected men to the state health departments were made in many states.

A review of the degree of cooperation a year later, i. e., in May 1943, by the Tuberculosis Control Section of the U. S. Public Health Service brought out the fact that state health departments in forty-seven of the forty-eight states and in the District of Columbia were provided with at least the names and addresses of men rejected because of tuberculosis. Twenty-four of the states received the chest x-ray film on which rejected was based, in addition. As a rule reports and films are sent from state Selective Service System headquarters directly to the state health department.

In twenty-five of the forty-eight states and in the District of Columbia at the time the review was made follow-up on the cases reported was recorded by the state health officers as complete. In twenty-one states only partial follow-up was practiced. In the remaining states arrangements for follow-up had not been made. The chief reason given for inadequacy or failure of follow-up was shortage of local personnel. In numerous states the state and county affiliates of the National Tuberculosis Association have performed effective service in supplementing the work of the state and city health departments.

In this connection it is worth pointing out that in the face of personnel shortage effective review and follow-up of cases can be made only through definite organization of those interested in the field. It is believed that an adequate survey within states will reveal additional assistance which can be coordinated by county health officers into successful working teams.

REVIEW BOARDS

In many of the states, at the present time, state headquarters of the Selective Service System have established review boards for the verification of diagnosis in men rejected for tuberculosis, with a view to reconsideration of inactive cases in which the evidence for final rejection is not convincing. The review system varies in different states, but as a rule it involves study of films and pertinent clinical facts by a board or boards of tuberculosis and x-ray specialists, and recommendation, through appropriate channels, of needed medical care in the case of men with active or potentially active disease and of resubmission of men by local boards to induction stations in the case of registrants who are, in the judgment of the board, able to perform military service. In the latter case the procedure is the same as in the original appearance of the man concerned. He is again examined at an armed forces induction station and may be accepted or again rejected, according to the decision of the induction station examining board. When the lesion is of "borderline" character, men are frequently accepted on the basis of the fortification of opinion furnished by the review board's recommendation.

In some states review boards other than those constituted through Selective Service System action have been established by special arrangement between the induction station and chest specialists in the local medical profession. Through these boards the same purposes are accomplished.

CASE FINDING IN THE ARMED FORCES

Case finding does not stop with the preinduction x-ray examinations. The latter have not been perfect, and a certain number of cases of active tuberculosis have failed to be detected by the induction station examination. There are various reasons. The volume and necessary speed of the examinations are in large part responsible. The failure to exclude all cases has been a cause of serious concern in the Army and Navy, and appropriate arrangements for avoiding all possible errors have been made. These appear increasingly effective.

Experience has shown that a large proportion of the tuberculous cases missed at the induction stations are discovered within the first few months of service, before substantial change has taken place in the extent of the disease. These cases are found in the course of certain required physical examinations, as in Officer Candidate Schools or in hospitals in the course of general or special physical examination.

Active cases discovered in the Army and Navy receive initial treatment in station and general hospitals, but, since active tuberculosis disqualifies for any form of military service, enlisted men are generally discharged at an early date to the Veterans Administration. Special arrangements for longer care are at present in effect at Fitzsimons General Hospital for commissioned officers, noncommissioned officers of the first three grades and enlisted men nearing twenty years of service in the Army, and for certain Navy personnel.

Of the millions of men called for military service or appearing for voluntary enlistment in the last three years the great majority have had a chest x-ray examination. Figures have not yet been released on the total number rejected at recruiting and induction stations. The rate has varied slightly with minor changes in regulations. During the first part of 1943 the rejection rate for tuberculosis was approximately 1.4 per cent.

Through the close cooperation here described between the armed forces induction stations, state and local Selective Service units and state and county health departments, an effective program is being developed for rejectees which should save many individual lives and have far reaching effect on the control of tuberculosis.

The system in operation also ensures that men whose lesions escaped detection before induction and men who develop new tuberculosis in the armed services will sooner or later be discovered. As indicated in the preceding paragraphs, detection is frequent in the early months of service. Chest x-ray examination at discharge, required in both the Army and the Navy, enables discovery of those whose lesions were not detected earlier.

CARE BY VETERANS ADMINISTRATION

With rare exception all soldiers and sailors discharged from service by reason of tuberculosis are entitled to care at the hands of the government. Up to Dec. 31, 1943 the Veterans

Administration had adjudicated the claims of 4,858 enlisted men who entered service in the Army, Navy, Marine Corps or Coast Guard after the declaration of a national emergency on Aug. 17, 1940 and were discharged from service because of tuberculosis. In 2,838, or 58.4 per cent, of these cases claim for disability pension was allowed. The 2,838 allowed cases were divided as follows: Army 87.2 per cent, Navy 10.4 per cent, Marine Corps 1.5 per cent, Coast Guard 0.9 per cent. Regardless of decision as to service connection of the lesion and claim for pension, soldiers and sailors are eligible for care in veterans facilities in accordance with Public Law 10, 78th Congress, enacted March 17, 1943, which provides that any person serving in the active military or naval service of the United States between Dec. 7, 1941 and the termination of hostilities of the present war and not dishonorably discharged will obtain at discharge the status of a "veteran of any war" and thus be eligible for hospitalization as a beneficiary of the Veterans Administration. The Veterans Administration maintains thirteen tuberculosis hospitals and additional beds for tuberculosis in twenty-six general hospitals. On Jan. 31, 1944 a total of 6,114 beds were available for tuberculous veterans, including those of World War I.

COOPERATION BETWEEN SERVICES

Continued improvement is being made in the separate phases of the program here outlined, to the end that maximum utilization may be made of the unusual opportunity for tuberculosis control. Through informal but efficient arrangement representatives of National Headquarters, Selective Service System, the Medical Corps of the Army, the Medical Corps of the Navy, the Tuberculosis Control Section of the U. S. Public Health Service and the Office of the Medical Director of the Veterans Administration meet at regular intervals to consider, recommend and effect improvements in this cooperative enterprise. The National Tuberculosis Association, National Research Council, the American Legion and other organizations are cooperating with these bodies in active measures for the education of men rejected or discharged from the military services by reason of tuberculosis, ensuring their understanding of the great importance of their own care and the necessity of preventing transmission of their disease to others.

ARMY

PENICILLIN TREATMENT OF RESISTANT GONORRHEA

Because of the adequacy of supplies of penicillin available to the Army, persons with sulfonamide resistant gonorrhea will not be transferred to general hospitals for treatment except when indicated by complications, according to the Technical Bulletin of Medicine, No. 16, issued by the War Department recently. Station hospitals should requisition any additional supplies of penicillin needed for this purpose from the nearest general hospital. Penicillin will be administered to persons with gonorrhea immediately after failure to respond to one course of a sulfonamide compound. There is still insufficient evidence to justify the use of penicillin in any of the venereal diseases other than gonorrhea, and it will not be used for such treatment except when specifically authorized by the Surgeon General.

CENTER FOR TREATMENT OF ARTHRITIS

A center for the diagnosis and treatment of arthritis has been set up at the Army and Navy General Hospital, Hot Springs National Park, Ark., the War Department recently announced. All patients with severe and prolonged arthritis to be treated by the Army will be sent to the hospital, which is specially equipped for treatment of diseases of the joints and has facilities for extensive physical therapy. Lieut. Col. Philip Hench, formerly of the Mayo Clinic, is in charge of medical service at the hospital. Dr. Hench is a leading specialist and an authority on diseases of the joints. While arthritis does not account for a large percentage of illnesses in the Army, it is found to be one of the most disabling.

FIRST AID, SANITATION AND PERSONAL ADJUSTMENT COURSES

Emphasizing that malaria, diarrheal diseases and neuropsychiatric disorders are each responsible for a large part of hospital admissions, the War Department has issued instructions that every officer, noncommissioned officer and enlisted man be given standard courses of instruction in first aid, sanitation and personal adjustment. Material for the personal adjustment courses for all ranks—a new topic in military education—is being distributed by the Surgeon General as rapidly as it can be prepared.

The commanding generals of the Army Ground, Air and Service Forces have been ordered to provide such inspections and tests as will assure the attainment and maintenance of the appropriate minimum standards of proficiency in first aid, sanitation and personal adjustment by all commissioned and enlisted personnel. At least one inspection and test will be made within the six months preceding the departure of a unit overseas.

The department has instructed that "appropriate command action" be taken in the cases of all officers and noncommissioned officers who do not attain the prescribed minimum standard of proficiency.

It has also been ordered that refresher courses in the three topics be given in all officer pools, at overseas replacement depots and in staging areas.

To attain the prescribed standards a thirty-three hour instruction course for enlisted men of the lower grades has been outlined. For noncommissioned officers and company officers a twenty-six hour course is outlined, designed to give such per-

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sonnel a teaching knowledge of sanitation and first aid and to enable them to recognize signs and symptoms of poor mental health and to know the causes of mental breakdowns.

The thirty-three hour enlisted men's course will include twenty hours during which such phases of sanitation as personal hygiene, sex hygiene, mess sanitation, control of intestinal diseases, water purification, malaria control and the like will be covered; ten hours of first aid, and three hours of personal adjustment lectures, including personal adjustment problems, recognition and handling of emotions and feelings and a healthy point of view toward service life.

The twenty-six hour course is similar, twelve hours being given to sanitation, eight hours to first aid and six hours to personal adjustment lectures.

The War Department stated that the degree to which commanders of all echelons preserve the fighting strength of their units by maintaining the health of their men is a measure of their leadership ability. "The unit surgeon is a staff officer of essential importance," the department stated. "He is not provided for the sole purpose of administering to the sick and injured. His primary responsibility is to advise his commander how the personnel of the command can be kept physically and mentally well."

THREE OFFICERS OF NURSE CORPS AWARDED SILVER STAR

Three officers of the Army Nurse Corps were recently awarded the Silver Star, the first women in the history of the United States to receive that decoration, for heroism during action on the Fifth Army's Anzio-Nettuno beachhead in Italy. The awards were presented at a joint ceremony in Italy by Major Gen. John P. Lucas, U. S. Army, to 1st Lieut. Mary L. Roberts, Dallas, Texas, 2d Lieut. Elaine A. Roe, Whitewater, Wis., and 2d Lieut. Rita Virginia Rourke, Chicago. All three were cited for their coolness and efficiency during a concentrated shelling in February of a field hospital area. Nurses were killed and many among other military personnel were wounded, power lines were cut and doctors and nurses were forced to work by flashlight in the treatment and evacuation of the wounded.

The citation accompanying Lieutenant Roberts' award read as follows:

"Lieutenant Roberts exhibited exceptional coolness and outstanding leadership, reassured the nurses under her charge and encouraged and urged them to greater efforts. Despite the impairment of facilities and the prolonged shelling, the vital work at three operating tables was continued under the inspiration of her conduct and example.

"The actions of Lieutenant Roberts in a critical situation assured the uninterrupted continuation of activities and contributed in a large measure to the success of the operations. Her bravery and unfaltering devotion to duty and complete disregard for her own welfare are in the best traditions of the military service and reflect the highest credit on herself and the Army Nurse Corps."

The citation given jointly to Lieutenant Roe and Lieutenant Rourke read in part as follows:

"Working with flashlights, Lieutenant Roe and Lieutenant Rourke immediately began the orderly evacuation of patients while quieting others who had become alarmed and were attempting to leave their beds.

"Throughout the shelling, which included many air bursts, they exhibited remarkable coolness and courage and carried on with complete disregard for their own safety. The quick thinking, competence under unnerving conditions, and the loyal considerations of Lieutenants Roe and Rourke for the welfare of their patients, prevented confusion which might have been critical, and were an inspiration to the enlisted men working under their supervision."

Lieutenant Roberts is a graduate of Hillman Hospital School of Nursing, Birmingham, Ala. She entered the Army at Fort Sam Houston, Texas, May 19, 1942.

Lieutenant Roe is a graduate of Mary Thompson Women's and Children's Hospital, Chicago. She entered the Army Nov. 10, 1942 at Camp Grant, Ill.

Lieutenant Rourke is a graduate of Providence Hospital, Washington, D. C. She entered the Army Dec. 1, 1942 at Percy Jones General Hospital, Battle Creek, Mich.

LIEUT. COL. WILLIAM A. HUTCHINSON AWARDED LEGION OF MERIT

Lieut. Col. William A. Hutchinson, formerly of Texarkana, Ark., was posthumously awarded the Legion of Merit by the War Department "for exceptionally meritorious conduct in the performance of outstanding service as surgeon for the Eritrea Service Command from May 1942 to February 1943. The difficult and varied terrain in the area covered by this command created a diversity of climatic conditions which caused unusual health problems. Colonel Hutchinson established a highly efficient medical service for both military and civilian personnel, enforcing a rigid health control which was of great importance to the success of local operations. His work in the control of malaria, which was one of the most common health hazards, and his systematic sanitation of all water supply points were outstanding accomplishments. By his exceptional professional skill, untiring efforts and effective methods of operation, Colonel Hutchinson contributed in a marked degree to the successful operation of the United States Army forces in Eritrea." Dr. Hutchinson graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1924 and entered the service in May 1941. He was reported killed in an airplane crash Feb. 23, 1943.

BRIG. GEN. EUGEN G. REINARTZ RECEIVES THE JOHN JEFFRIES AWARD

Brig. Gen. Eugen G. Reinartz, commandant of the Army Air Forces School of Aviation Medicine, Randolph Field, Texas, was presented with the John Jeffries Award for 1943 recently. This honor is awarded by the Institute of Aeronautical Sciences "for outstanding contribution to the advancement of aeronautics through medical research." The award was presented by Major Gen. David N. W. Grant, air surgeon of the Army Air Forces. General Reinartz has had the longest continuous service of any medical officer assigned to the Army Air Forces, having known no other service in more than twenty-six years of military duty.

The award honors the memory of Dr. John Jeffries, an American physician, who with the French balloonist Blanchard made the first aerial voyage across the English Channel in 1785 and on a previous voyage made the earliest recorded scientific observations from the air. The award was established by the institute in 1940 to give recognition to the importance to aviation of scientific endeavor in the field of medicine.

ARMY NURSE CORPS

Lieut. Col. Ida W. Danielson, A. N. C., who was formerly in charge of personnel for the Army Nurse Corps, has assumed the post as director of nursing in the European theater of operations, succeeding Lieut. Col. Margaret E. Aaron, who has been returned to the United States because of illness. Succeeding Colonel Danielson as chief of nursing personnel is Major Nola Forrest, who for the past eight months has been in charge of nursing services in the California-Arizona Training Center.

FLIGHT SURGEONS' ASSISTANTS

A class of one hundred and twenty-one flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, March 6. Brig. Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school.

ARMY PERSONALS

Dr. Midian O. Bousfield, formerly of Chicago, first Negro member of the Board of Education and former field medical director of the Rosenwald Foundation, has been promoted from lieutenant colonel to colonel.

Dr. Roscoe C. Giles, first Negro graduate of the Cornell University Medical College, New York, 1915, has been promoted from major to lieutenant colonel.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS,
DENTISTS AND VETERINARIANSTHE SUPPLY OF INTERNS AND
RESIDENTS

The failure of hospitals to take the steps necessary to obtain deferment of one third of the commissioned officers serving as interns who have been called to active duty for the month of April has produced a serious lag in the 9-9-9 Intern-Resident Deferment Program. The Directing Board of the War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, Veterinarians and Nurses has sent a letter to its state chairmen for physicians and to hospital superintendents calling attention to the seriousness of the situation.

The effects of this failure, the Directing Board maintains, may not be felt immediately, but by July 1 hospitals will feel seriously the results of failure to obtain the deferment from active duty of the total number permitted under the agreement reached by the Procurement and Assignment Service with the Surgeons General. Under this agreement the Procurement and Assignment Service can obtain deferments from active duty of one third of the commissioned officers who are completing nine month internships in order to insure filling of essential junior residencies. It also can obtain deferments for one half of the commissioned officers serving in junior residencies for service in nine month senior residencies.

Of the group of commissioned officers serving as interns and called to active duty after January 1 and before April 1, deferments have been obtained for the one third permitted by the Procurement and Assignment Service-Surgeons General agreement.

The total number of deferments from active duty of those called to active duty in April fell short of the one third permitted. Even if the Central Office Procurement and Assignment Service had received in time all the applications for deferment of interns and residents which were ultimately submitted, the total number of these requests would still not have equaled one third of the total number called to active duty. This means that hospitals are not finding the physicians who have graduated at odd dates and who therefore complete their internships at odd dates. This also means that medical manpower is not being utilized most effectively.

Still another difficulty develops from the fact that deferment application forms are being received by the central office so late that action cannot be taken under the agreement already mentioned. During the past thirty days 50 per cent of all applications for deferment of interns and residents were received too late for action.

Perhaps the most serious result is the complete loss to civilian hospitals of the services of those individuals who might have been deferred but who are now called to active duty. Each physician going on active duty in April, who might have been deferred, means a loss to civilian hospitals of thirteen and one-half months of service by that physician. This April group was of vital importance, since it is the only large group between January and July from which hospital service could be obtained to cover the shortage period from July to October of this year.

Equally serious is the failure to submit deferment application forms on time. The Procurement and Assignment Service has had excellent cooperation from the Surgeons General. The Surgeon General of the Army, as a matter of fact, requested the Adjutant General to revoke April active duty orders for one half of the men for whom deferment requests were submitted after the deadline. Each case in which the Surgeon General is asked to request revocation of active duty orders from the Adjutant General increases the work load of both

Dr. Bousfield graduated from Northwestern University Medical School, Chicago, in 1909. Both officers are serving at Fort Huachuca, Ariz.

Dr. Julius L. Sandhaus, who has been stationed in England for the past fourteen months, was recently promoted to the rank of lieutenant colonel. He graduated from Jefferson Medical College of Philadelphia in 1936 and entered the service as a first lieutenant in January 1941.

offices and also seriously affects the agreement reached between the Procurement and Assignment Service and the Surgeons General.

The lists appearing in *THE JOURNAL* have been dwindling from week to week. This creates the impression that civilian hospitals do not need the services of one third of the commissioned officers being called to active duty at the termination of their internships.

Hospitals should take certain definite steps:

1. They should determine the exact dates on which commissioned officers who graduated on odd dates will complete their internships.

2. They should also determine for their own information the exact dates on which other commissioned interns will be called to active duty.

3. Even if they do not have a need for the services of these interns in junior residencies, they should assist other hospitals which are short of essential residents to obtain the services of these commissioned officers.

4. To assist other hospitals, this information should be sent to the state chairmen for Physicians, Procurement and Assignment Service, within the next thirty days so that the state chairmen will be able to refer the names of commissioned officers eligible for junior residencies to hospitals in need of their services.

5. Hospitals in need of residents can protect themselves by getting in touch with commissioned officers serving internships in sufficient time to obtain their deferments for junior residencies.

6. Hospitals requesting deferments from active duty must fill out and forward forms 218-Revised (Application for Deferment of Interns and Residents) in sufficient time to have them favorably considered by the Surgeons General—four months before completion of hospital service.

If the 9-9-9 Intern-Resident Deferment Program is to be continued there must be an immediate increase in the cooperation between hospitals in order to insure effective utilization of medical manpower. There must also be an increase in the cooperation between hospitals and the state chairmen of the Procurement and Assignment Service.

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, March 25, p. 928)

FLORIDA

St. Luke's Hospital, Jacksonville. Capacity, 224; admissions, 7,763. Mr. W. E. Arnold, Executive Director (1 intern—July 1).

ILLINOIS

Mercy Hospital, Chicago. Capacity, 360; admissions, 7,701. Sister M. Redempta, R.N., Superintendent (1 intern).

IOWA

Broadlawn, Polk County Hospital, Des Moines. Capacity, 174; admissions, 2,823. Mr. T. P. Sharpnack, Administrator (interns—April 1, October 1).

PENNSYLVANIA

Philadelphia Hospital for Contagious Diseases, Philadelphia. Capacity, 1,077; admissions, 3,444. A. C. LaBoccetta, Acting Superintendent and Medical Director (3 residents).

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Halloran General Hospital, Staten Island, N. Y.: Low Back Pain, Dr. Philip D. Wilson, April 11.

At Station Hospital, Fort Niagara, N. Y.: Knee Disabilities, Dr. Pio Blanco, April 5; Acute Anterior Poliomyelitis, Dr. Francis Gustina, April 12.

At Grand Central Palace, New York City: Peripheral Vascular Disease, Dr. A. Wilbur Duryee, April 7; General Surgical Approach to the Abdomen, Dr. John F. Erdmann, April 14 and 21; Disorders of the Low Back, Dr. Arthur Krida, April 28.

At Camp Shanks, Orangeburg, N. Y.: Surgical Bacteriology in the Treatment of Surgical Infections, Dr. Frank L. Meleney, April 6; Present Status of Use of Sulfonamides in Surgery and Medicine, Dr. Walsh McDermott, April 13; Anesthesia, Dr. Emery A. Rovenstine, April 20; Neuropsychiatric Problems in the Army, Col. William C. Porter, April 27.

At Camp Upton and Mason General Hospital, New York: Cardiac Irregularities, Dr. Harry Gold, April 3.

At Camp Kilmer, N. J.: Blood and Plasma Bank and the Use of Its By-Products, Lieut. Clifford K. Murray, April 10; Psychosomatic Aspects of Hypertension, Dr. Edward Weiss, April 24.

At England General Hospital, Atlantic City, N. J.: Dysentery, Dr. William Sawitz, April 4.

At Fort Monmouth, N. J.: General Public Health Aspects of Venereal Disease Control, Dr. Norman Ingraham, April 5; Yellow Fever, Dr. William Sawitz, April 12; Fundamentals of Anesthesia, Dr. Frederick P. Haugen, April 19; Peripheral Nerve Block, Lieut. Comdr. Don Hale, April 26.

At Indiantown Gap, Pa.: Basic Concepts in the Treatment of Burns, Dr. Jonathan Rhoads, April 5; Treatment of Burns and the Closure of Surface Defects by Skin Grafts and Flaps, Dr. Hans May, April 12; Viral Pneumonia, Dr. Truman Schnabel, April 19; Yellow Fever, Dr. William Sawitz, April 26.

At Naval Hospital, Philadelphia: Pericarditis, Dr. Thomas M. McMillan, April 14; Digitalis Therapy, Dr. William D. Stroud, April 14; Rickettsial Infections, Dr. William Sawitz, April 28.

At Camp Lee, Va.: Laboratory Aspects of Tropical Diseases, Dr. J. H. Scherer, April 6; Malaria (Clinical Manifestations and Therapy), Dr. Carlton J. Casey, April 14; Plastic and Maxillofacial Surgery, Dr. Guy Harrison, April 21; Respiratory Diseases and Their Treatment by Chemotherapeutic Agents, Capt. Paul S. Strong, April 28.

At Woodrow Wilson General Hospital, Staunton, Va.: Prevention and Treatment of Wound Infections, Dr. William H. Parker, April 6; Drainage of the Pleura with Particular Relation to Chest Injuries, Dr. I. A. Bigger, April 13.

At Camp Pickett, Virginia: Respiratory Diseases and Their Modern Treatment, Dr. Porter P. Vinson, April 6; Prevention and Treatment of Wound Infections, Lieut. Col. Harlan H. Taylor, April 12; Shock and Burns, Lieut. Comdr. Arthur J. Mourot, April 14; Traumatic Surgery of the Abdomen, Lieut. Col. W. R. Galbreath, April 19; War Wounds of the Genitourinary Tract, Major William Bisher, April 21.

At Fort Eustis, Va.: Amputations, Upper and Lower Extremities, Comdr. H. C. Felt, April 13; Psychosomatic Medicine, Dr. Louis A. Schwartz, April 27.

At Norfolk Naval Hospital, Portsmouth, Va.: Newer Drugs and Their Uses in Practice, Major Paul L. McLain, April 12; Peripheral Nerve Injuries, Dr. Claude C. Coleman, April 26.

At Langley Field, Virginia: Psychiatric Problems in Military Service, Dr. John A. Rose, April 4; Military Surgery, Col. Daniel L. Borden, April 11; Treatment of Trauma to the Chest (demonstrated with motion pictures) Major Leonard Bush, April 18; Aviation Medicine, General, Dr. Ludwig Lederer, April 25.

At Ashford General Hospital, White Sulphur Springs, W. Va.: Allergy with Special Reference to Asthma (clinical presentations and ward rounds), Dr. Oscar Swineford Jr., April 3; Arthritis (clinical presentations and ward rounds), Dr. Ralph Pemberton, April 10.

At Fort George G. Meade, Maryland: Lung Injuries, Comdr. L. E. Gilje, April 14; Aviation Medicine with Special Reference to the Cardiovascular System, Dr. Walter A. Bloedorn, April 21; The Use of Sulfamerazine in Dysentery, Dr. Lay Martin, April 28.

At Fort Belvoir, Virginia: Traumatic Surgery of the Abdomen, Capt. Joseph E. Hamilton, April 3; Peripheral Nerve Injuries (demonstrated with motion pictures), Major Barnes Woodhall, April 10; Diagnosis and Treatment of Shock, Lieut. Col. D. B. Kendrick Jr., April 17; New Chemotherapeutic Agents and Their Uses in Practice, Dr. Harry F. Dowling, April 24.

At Newton D. Baker General Hospital, Martinsburg, W. Va.: New Chemotherapeutic Agents and Their Uses in Practice, Dr. Russell A. Nelson, April 3; Dysenteries, Dr. Moses Paulson, April 10; Malaria, Dr. Walter A. Baetjer, April 17; Virus and Bacterial Pneumonias and Their Treatment, Dr. Warfield T. Longcope, April 24.

At U. S. Naval Hospital and U. S. Naval Academy Dispensary, Annapolis, Md.: Amputations, Upper and Lower Extremities, Lieut. Col. Martillus H. Todd, April 21.

At United States Naval Hospital, Bainbridge, Md.: Clinic in Traumatic Surgery, Lieut. Col. Firmadge K. Nichols, April 6; Clinic in Orthopedic Surgery, Dr. H. L. Skinner, April 13.

HOSPITAL SHEETING FOR MATTRESS PROTECTION

The U. S. Department of Commerce, National Bureau of Standards, recently issued a pamphlet on Hospital Sheeting for Mattress Protection, Commercial Standard CS114-43, which was accepted by the trade as its standard of practice for new production beginning Dec. 1, 1943. A recommended commercial standard for this commodity was adopted at a joint meeting of a committee of manufacturers of hospital sheeting for mattress protection and a committee of the American Hospital Association, March 25, 1943. The purpose of this commercial standard is to serve as a guide to producers, distributors and users of sheeting impervious to moisture used for the protection of hospital mattresses. It also provides a basis for clear understanding among producers, distributors and purchasers, and for specifying and guaranteeing the quality of such sheeting.

MILK SUGAR PRODUCTION

Because milk sugar production this year will not be sufficient to meet the requirements of all users, the War Food Administration has issued FDO 95 to direct milk sugar to most essential purposes. Effective April 1, FDO 95 requires approval by the director of distribution for use of milk sugar for any purposes. Under the order, authorization to accept delivery and use of milk sugar must be requested on forms supplied by WFA's office of distribution. When approval is granted, the supplier will be notified of the quantity he can supply under the order. The total estimated requirements for milk sugar in 1944, including infant foods, pharmaceuticals and penicillin, are more than 15 million pounds, exceeding 1943 production by at least 8 million pounds.

ALLIED FORCES DENTAL SOCIETY

The formation of an Allied Forces Dental Society, composed of leading dental surgeons of the Allied Nations, was recently reported by the American Dental Association. The society was formed for the purpose of pooling ideas to better the health of the fighting forces and to further postwar dental science, and more than 650 dental surgeons of the Royal Navy, Royal Air Force and American, British and Canadian armies have been admitted to membership in the society. Major Richard H. Carnahan of Texas, Capt. Philip S. Brackett of Massachusetts, Lieut. Comdr. E. S. Boden of Ohio and the help of British dental officials organized the new society, which was formed in London. Internationally known dental surgeons give lectures at the society's monthly meetings on latest methods of treatment.

ORGANIZATION SECTION

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Fortieth Annual Meeting, Held in Chicago, Feb. 14 and 15, 1944

(Concluded from p. 935)

THE FEDERATION OF STATE MEDICAL BOARDS

FEBRUARY 14—EVENING

FEDERATION DINNER

Licensure Trends and Medicine

ALPHONSE M. SCHWITALLA, S.J., St. Louis: The two chief categories of functions which are recognized to be the functions of the state boards, namely (a) the evaluation of professional competence of the physician and (b) the police power to debar from practice a physician proved to be unworthy, have in the past been differentially affected by social change. Hence it may be expected that they will be differentially affected by future social change. Of the two, the first group of functions, evaluation, is probably the more important for safeguarding the profession's integrity; the second is probably more important for securing the social protection of the people of which the state board is the guarantor. In the days that lie ahead the state boards will face intensified and greatly extended problems. Despite the adjustments which have been made in most states accepting a chronologically accelerated curriculum and accepting the recent recommendations of the Procurement and Assignment Service at the time when the 9-9-9 plan was introduced, there can be little doubt that numerous questions will arise concerning both the institutions from which students are graduating from this accelerated program and the particular qualifications of the individual applicant for license. There are still sufficient differences in the legal requirements for the practice of medicine to give rise to threatened increasing difficulties in reciprocity. To this problem there might be added the related problem of the foreign medical graduate. Then there stares us in the face as a seemingly inescapable menace the great problem of osteopathy. Despite the vigilance of the state boards there can be little doubt that cultism has gained ground in the last few years, and even though the responsibility for that growth cannot be laid at the door of the state board, nevertheless it is a state board problem that is growing in magnitude and in intensity. Then there is the question of the administration of examination methods for the purpose of determining the professional qualifications of the professional licensee, a question which on the surface is merely a matter of administrative policy but which is extremely far reaching in its professional implications. The objectives of the examination, standards of medical practice, the determination of procedures, all these and related questions are involved in any change of policy with reference to the method of examination. The state boards have accomplished much. They are face to face with much more. As medicine moves onward and upward the state boards too will have to enlarge their horizons and aspire to still higher heights of responsibility.

FEBRUARY 15—MORNING

DR. ADAM P. LEIGHTON, Portland, Maine, Presiding

ACCELERATED MEDICAL TRAINING AND RELATED LICENSURE IMPLICATIONS

Premedical Training

DR. VICTOR JOHNSON, Chicago: Acceleration in medical schools involves no basic changes except the elimination of the long summer vacations. Curricular changes are minimal, and no significant increase in weekly work by the student is required.

The premedical curriculum has been shortened by greatly increasing the daily and weekly assignments as well as by eliminating long vacations. The results of this experiment in concentrated premedical education will be watched with interest by all who are concerned about the long years of training required for the professions, especially medicine. A reduction in this time, somewhere between the beginning of grammar school and the internship, would be desirable if it could be effected without impairment of the quality of the product.

A second feature of the Army and Navy programs is a standardization of the premedical curriculum, with little time for elective work. While this might help to elevate standards in some of the weaker participating schools and may be convenient to administer, it is not desirable as an educational principle to be retained.

A third experiment—a major one—is the attempt to select students for the study of medicine at an earlier academic period than in peacetime. It will be important to know whether such early selection will be successful.

Certain features of the selection program are highly undesirable. Bilateral selection by the school and the student has not been incorporated into the plan. Committees of medical student deans select the students for the study of medicine, but these committees or the schools or the students may not determine which student shall attend which school. Although this is apparently an administrative necessity, it must be recognized as educationally unsound.

A fourth innovation in wartime premedical training is one which may prove to be even more far reaching in its consequences than the ones already mentioned. The Army and Navy programs entirely eliminate the economic requirement for the study of medicine. Under the Army and Navy programs, ability to pay for an education has nothing to do with the selection of those to be educated. A serious study should be made of this obvious but revolutionary principle, to determine whether an entirely new source of brain power is being tapped.

It should be possible to develop an educational program involving four years of general education in the humanities, social and natural sciences, commencing with the third year of high school and continuing until a student is about 18 or 19 years old. This could be followed by a program of five calendar years of the study of medicine in an integrated curriculum incorporating the preclinical laboratory sciences and the study of man in health and disease. Graduation with the M.D. degree would then occur at 23 or 24 years of age instead of at 26 or 27. Licensing bodies must continue to adjust themselves to changes or arbitrarily limit the extent to which medical education shall progress.

The Accelerated Program in Medicine

DR. E. M. MACEWEN, Iowa City: The accelerated program was accepted with many misgivings as a war emergency measure because there was no other method by which the production of doctors could be increased without seriously lowering medical educational standards. The chief criticisms that have been directed against the program are (1) that medical standards were being lowered, (2) that the war would be over before any appreciable number of doctors would be made available, (3) that the health of the medical students was endangered and (4) that the student would have no time for contemplation and digestion of new material.

It may be concluded that the accelerated program is meeting the condition for which it was adopted. It is definitely adding to the production of doctors. The financial worries of more than 80 per cent of the students have been solved. Their health should not be endangered more than under prewar conditions. The curriculum has not been shortened; in fact, it has been lengthened in many schools. Therefore in agreement with the statement of Johnson, the conclusion must be drawn that the

accelerated program "per se need not reduce the standards of medical education"; that if certain other conditions can be met, a modified accelerated program deserves serious consideration in the permanent postwar plans.

Up to the present all the students admitted to our schools have been selected by the faculties of the respective colleges. With the exception of the present freshman class, all the students have met the regular prewar admission standards of the particular school they entered. Many of the members of the freshman classes and at least 80 per cent of all new admissions for the duration will present only the reduced emergency premedical training. After Jan. 1, 1945 they will have had only the concentrated military premedical courses. Many of these courses will be taken in very large classes with minimal personal instruction and under very difficult study conditions. What effect this regimented program will have on the quality of our future classes only time will tell. The fact that most of these students will have no choice of schools and that the schools will have no direct voice in the selection of their students may materially change the type of the student body. Whether this change will be for better or for worse remains to be seen. The doctrine expressed at the beginning of this paper makes us skeptical. On the other hand some excellent young men who normally, because of financial difficulties, would not go beyond high school may now have the opportunity for a professional training.

Despite all these handicaps the faculties of our approved medical colleges will continue to demand quality work from all their students. That a uniform is not a protection against academic failure has been amply demonstrated during the past year.

Effect of the Accelerated Program on Hospital Internships

DR. JEAN A. CURRAN, Brooklyn: Reduction of all internships to nine months duration appears to have resulted at present in generally lowered educational standards and further accentuation of intern shortages. But perhaps it is a bit early to estimate the full impact of the accelerated curriculum and the abbreviated internship schedule on the final quality of medical product that will be delivered to the country during the war and the postwar years. From all sides there appears to be uniform agreement that the nine months internship, either rotating, mixed or straight, is inadequate as an educational experience. The arbitrary reduction of all internships to the length of an academic year has merely accentuated a long term development. Therefore the rationing instituted last autumn by the Procurement and Assignment Service must be viewed as merely a palliative and not a curative measure; and more fundamental remedies must be sought. After the conclusion of hostilities there will probably be considerable demand for residency opportunities by men returning from military service, for which preparations must be made. At the same time we may anticipate a steadily widening gap between the increasing number of internships annually made available and the number of graduates from our schools to fill them. Even if all hospitals are able to attain a satisfactory educational level and lengthen their internships to two years, I doubt very much if supply and demand can be balanced. The answer, so far as hospitals are concerned, would appear to be in the provision of a greatly increased number of mixed residencies on a salaried basis, similar in complexion to senior internships but of longer duration and shading off into part time and then voluntary arrangements. This would give valuable preparation for men intending to enter general practice and at the same time would provide the necessary house staff coverage.

But all this is in the future. As we try to face the present situation as realistically as possible, every effort must be made to use the personnel now available as effectively and efficiently as possible. As never before, it is essential that each new group of interns be given thorough orientation in their duties when they begin service. Through the use of "streamlined" procedure books, better teamwork among administrators, medical staffs, nurses, social workers and technicians, provision of more stenographic or clerical assistance and the elimination of every

unnecessary frill of "extra paper work" or extraneous duties, perhaps we may expect results as remarkable as those of the Kaiser shipyards. From painful necessity and through definition of new objectives in this changing social order, we may reach an attainment very sorely needed, namely a new vision and a spirit to insure its accomplishment.

While all of our resources at the present time are being devoted to an all out military effort, it would seem absolutely necessary that we plan as well for the postwar educational needs of our hospitals if we are going to avoid a prolonged medical depression.

Medical Licensure Aspects of Accelerated Medical Training

DR. J. EARL MCINTYRE, Lansing, Mich.: Much confusion now exists in the process of legalizing the practice of medicine by the new crop of graduates of the medical schools under the accelerated programs of education, including internship and those coming in by reciprocal indorsement. In states having basic science laws or inelastic statutory licensure requirements, serious situations have arisen. The Surgeons General and the Procurement and Assignment Service have formulated the 9-9-9 plan, and its adoption by some hospital associations has been announced in many states where either statutory requirements or provisions in basic science acts make it impossible for examining boards to correlate any convenient plan for the prompt examination and licensure of graduates, interns and those seeking license by interstate reciprocal indorsement.

Many states having statutory minimum educational requirements have remedied the situation by adopting amendments giving the state examining and licensing boards authority to modify such requirements and thus go along with the plan for acceleration of medical curriculum and for shorter internship training. Examination schedules and administrative processes were promptly adjusted in line with the new semester periods of the medical schools. We are confronted, however, in many states, as in Michigan, with the provisions of the basic science law which prohibit admission to examination or licensure by indorsement and which prohibit the practice of medicine by any one who does not hold a certificate from the State Basic Science Board, unless exempt by college matriculation prior to a certain date fixed by the statute.

The examining boards are asked to admit men to examination or licensure by interstate reciprocal indorsement without having first obtained the required basic science certificate. The examining boards are also asked to permit men to serve as residents or to practice medicine in hospitals under various classifications until the next medical or basic science examination without having first obtained medical licensure and, in many cases, the required basic science certificate. This the boards cannot do. They cannot by act or acquiescence issue any dispensation to any person to practice medicine in any capacity until such person obtains a license to practice medicine. Where the statute provides that they must first obtain a basic science certificate before being admitted to examination or before being licensed by interstate reciprocal indorsement, the board is powerless and can neither legally admit them to examination nor issue them a license by reciprocity, neither permit nor acquiesce in their serving as resident physicians or otherwise practicing medicine in any hospital or elsewhere in the state until the required certificate is first obtained.

Hospitals in many cases admit men to residencies without inquiring as to whether they are legally qualified under both medical acts or basic science laws to practice, believing that legal requirements as to examinations, licenses or certificates will soon be fulfilled. They then clamor for dispensation, and the doctors involved present most stirring accounts of the predicament in which they now find themselves.

The shortening of internship periods in states having statutory internship period requirements must be by a change in such statute, or an amendment. Where there are no such statutory requirements as to internship, the boards in the several states have yielded to the request of the military and shortened the internship period requirement by virtue of their rule making power.

There is another legal aspect of this whole problem on which I might briefly touch. It is a question of deferments. There is considerable ill feeling which has been aroused in individuals criticizing the military in taking able and legally qualified men into the service and deferring the unfit for further training. We in Michigan have found many cases in which men were deferred who were graduates of a C school and not eligible for licensure and of men who were deferred for further so-called internship training in hospitals which are not approved for internship training and who therefore never could be licensed to practice medicine in Michigan. The Office of Procurement and Assignment or any other federal agency or official has no authority to confer on any one the right to serve as a resident physician or to authorize the practice of medicine under any hospital classification who does not hold a medical license or a basic science certificate where required for the practice of medicine. The military may place these men in military service and the Office of Procurement and Assignment may so assign them, but they cannot assign them to civilian practice or to civilian hospitals.

I urged two years ago that some action be taken by the several states to establish uniformity of standards and requirements so that more uniform reciprocity may obtain between the several states. There is now little uniformity in basic science law requirements. Many men otherwise eligible not holding basic science certificates from another state are prevented from accepting hospital appointments or entering civilian practice for the reason that the basic science boards of the two states have technical bars to reciprocity.

FEBRUARY 15—AFTERNOON

The New Nebraska Medical Practice Act

DR. GEORGE W. COVEY, Lincoln, Neb.: The examinations for licensure in Nebraska are conducted, under the new law, by a board of five members instead of the old three member board. Section 7 of L. B. No. 139, amending section 71-305 of the compiled statutes of 1929, also provides that two of its members shall be officials or members of the instructional staff of a class A medical school. Furthermore, the terms of the members are staggered and any one member may remain on the board through only two consecutive terms. Section 20 relates to the requirements for admission to examination to practice medicine and surgery. Part of these requirements need some explanation or comment. Number 2 is as follows: "Present to the Department of Health a certificate of ability in anatomy, physiology, chemistry, bacteriology, pathology and hygiene issued by the Board of Basic Sciences." The Board of Basic Sciences has waived the examination in these subjects in certain instances, but only after examination of the papers of the applicants who have passed similar examinations in other states. Our Basic Science Board thus reserves the right to determine for itself that the applicant has had a comparable examination and that, in the opinion of the Nebraska board, he has made a passing grade. The final item in section 21 reads as follows: "An osteopathic school or college, fulfilling all the foregoing requirements, shall not be refused standing as an accredited medical school because it may also specialize in giving instruction according to any special system of healing." This section also includes the provision . . . that such minimum standards shall apply equally to all accredited schools." It places the entire responsibility for recommending schools for accreditation on the Board of Examiners in Medicine and Surgery.

Any school of osteopathy which can become accredited under the provisions of L. B. No. 139 is actually a so-called class A medical school and "osteopathic" in name only. Such a provision in the Nebraska law actually places the osteopathic school in its proper category. It is either teaching medicine and surgery according to accepted standards or it is teaching osteopathy. If it falls in the former category it will eventually cease to call itself osteopathic and its graduates will be doctors of medicine; if in the latter, they will remain osteopaths according to the accepted definition and will not seek to extend their practice beyond their lawful field. If similar laws were in operation throughout the nation, one can easily visualize the ease

with which many problems arising in relation to these two professions could be solved.

Many osteopaths had been practicing medicine and surgery in Nebraska prior to the Supreme Court decision which defined their scope of practice under the old law. This decision was so clear that all of those who had been practicing illegally were compelled to return to osteopathy. The effect was, however, to cause a redoubled effort on the part of the osteopaths to get legislation passed which would give them all the rights of physicians.

One examination has been given since the new bill became law. Twenty-one osteopaths took the examination under the provisions of this section. Of this number six passed and fifteen failed. There were seventy-nine doctors of medicine who took this same examination. Of these, all passed. It appears that a very small percentage of the osteopaths who fall under this provision will be licensed; that, if our present basic science law remains unchanged, a few new ones will become licensed to practice osteopathy and, if their schools become good enough to permit their being accredited, they will be doctors of medicine rather than osteopaths and thus the controversies may be ended.

The combination of a good basic science law with this medical practice act will in all probability lead to several results: In the first place, the over-all quality of medical practice should be improved. Whereas a few osteopaths may achieve the right to practice medicine and surgery, the rank and file of these cultists who are not qualified will be effectively prevented from so doing. Those who gain this right will be at least as well qualified as many of the practitioners who have the degree of doctor of medicine. There will be no opportunity for those who are not so licensed to practice lawfully any healing art excepting that defined by the Supreme Court decision of 1941. If similar laws are adopted elsewhere, the tendency will be for osteopathic schools to become class A medical schools and for osteopathy excepting for its intrinsic value as a form of physical therapy to die. We believe we shall be relieved of the necessity for constantly opposing legislation designed to undo our laws relating to medical practice. In other words, we hope that the menace of poorly qualified osteopaths and chiropractors attempting to come into the practice of medicine through the side entrance will have been effectually neutralized in Nebraska.

In conclusion, I should like to leave with you a thought which has presented itself to me and to others. Could the quality of medical practice be further elevated by an addition to our practice acts requiring that every licensee shall take an examination in medicine and surgery periodically to show that he continues to be qualified to practice his profession? This would eliminate the few who, after graduation, are no longer interested in further education and relieve us of the necessity for constantly apologizing for some members of our own profession.

Medical Legislation

J. W. HOLLOWAY JR., Chicago: Some time ago the requirements for acceptance in the Medical Corps of the Army were modified to admit, under specified conditions, graduates of non-accredited medical schools. Shortly thereafter there came to me an inquiry asking if service in the Medical Corps of the Army by such a graduate would qualify him for licensure in a state in which normally he could not qualify but in which the medical practice act contained an exemption in favor of former members of the Medical Corps of the Army. My answer was in the negative. While a number of states do relieve from the examination requirement applicants who have served in the Medical Corps of the Army, the matter of granting licenses to such applicants is usually left with the discretion of the licensing agency and is generally coupled with the requirement that the applicant must have graduated from an accredited medical school. Service in the Medical Corps of the Army, therefore, is not the open sesame to medical licensure as my correspondent implied. I myself do not feel that service in the Army or Navy Medical Corps should ipso facto qualify a physician for state licensure. The school of graduation is important, of course. So also is the quality of service rendered by the physician while in the Army or Navy, for some have been given honorable discharges for professional incompetence, for inadaptability and for other reasons that may or may not have a bearing

on qualification for licensure. Yet it does seem that the physician returning to civilian life deserves special consideration in the matter of licensure. He should not be penalized for answering the call of his country in her need.

Federal Funds for Relocation of Physicians

Early last October the President by special message asked the Congress to appropriate \$1,000,000 to be used by the Public Health Service to supply medical and dental care in critical areas. It was contemplated that the Public Health Service would use this appropriation to supply the needed care in one of two ways: (1) assign its own personnel to such areas to treat the civilian sick or (2) induce private practitioners of medicine and dentistry to move into the areas by paying them \$250 a month for a period of three months plus moving expenses. In event that the Public Health Service sent its own personnel into the areas to treat the civilian sick, it was proposed that these medical officers should charge for their services according to a fee schedule jointly formulated by the state department of health and the United States Public Health Service. The fees collected were to be turned over to the state department of

health to pay expenses incurred in rendering the care, such as office expense. If at the end of the year there remained any surplus, that surplus was to be covered in the Treasury of the United States. As enacted, the law provides \$200,000 instead of the \$1,000,000 initially requested, does not authorize the Public Health Service to assign its own personnel to critical areas, requires the requesting community to contribute 25 per cent of the cost and specifically provides that the relocated physician or dentist must obtain a license to practice in the state to which he moves.

While under this federal program the application for the services of a physician must be approved by the state health department, while the availability of physicians for relocation must be determined by the State Procurement and Assignment Service chairman, and while the financial arrangements will be made with the physician by the United States Public Health Service, the state licensing board will be the agency to determine the qualifications of the physician to practice in the state to which he is relocated. That determination must be made, of course, in compliance with state licensure laws.

U. S. PUBLIC HEALTH SERVICE TO STUDY BLUE CROSS PLANS

At the midwinter conference of plans for providing medical service, held in Chicago in February, it was voted to approve a study to be made by the U. S. Public Health Service of various Blue Cross hospital service plans. Following is a statement of the purposes, procedure and scope of the proposed study:

I. PURPOSE OF STUDY

The need for adequate health service to the people of America makes it desirable that the U. S. Public Health Service have an informed opinion of the present and potential usefulness of existing methods of distributing medical and hospital care.

The U. S. Public Health Service is interested in making a study to determine how well the Blue Cross Plans are now serving and may best serve public needs. Blue Cross Plans also are interested in learning how they may be made more effective. This study has been proposed in the public interest and its purpose is to appraise the advantages and limitations of Blue Cross Plans, which have enrolled thirteen million subscribers throughout the United States.

The board of trustees of the American Hospital Association and the Hospital Service Plan Commission have endorsed this study and have recommended that all Blue Cross Plans cooperate with the U. S. Public Health Service.

II. PROCEDURES OF STUDY

The study will include conferences with the directors and staffs of representative plans and, in cooperation with the plan directors, conferences with representatives of the hospitals, the medical profession and the general public in the community.

III. SCOPE OF STUDY

The study will include all aspects necessary for an understanding of the plans as individual entities and of the Blue Cross movement as a whole. This will cover the history, growth, subscription rates and benefits, contracts with hospitals, legal status, enrolment policies and problems, financial status, utilization experience and relations with hospitals, the medical profession and the general public. It will also include data as regards interplan relationships and the American Hospital Association approval program.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

April 1. "White Reaper."

Speaker, Kendall Emerson, M.D., Managing Director, National Tuberculosis Association, New York.

April 8. "Men with New Faces."

Speaker, Major General D. N. W. Grant, M. C., A. U. S., Air Surgeon, A. A. F., Washington, D. C.

April 15. "Decks Aflame."

Speaker, Capt. French Moair (MC), U.S.N., Washington, D. C.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 662 has been passed by the House to authorize pensions for certain physically or mentally helpless children. The purpose of this bill is to remove an inequality in existing law for the benefit of a small number of helpless children of the veterans of the Civil War, the Indian wars, the Spanish-American War, including the Philippine Insurrection and the Boxer Rebellion, and the Regular Establishment whose service was prior to April 21, 1898. S. 1767 has passed the Senate, contemplating the enactment of the "Servicemen's Aid Act of 1944." A subcommittee of the House Committee on Interstate and Foreign Commerce has concluded hearings on H. R. 3379, a bill to codify the laws relating to the Public Health Service. H. R. 4371 has been reported to the House, proposing an annual appropriation of \$5,000,000 to enable the Department of Labor to cooperate with state agencies adminis-

tering labor laws in establishing and maintaining safe and proper working conditions in industry and in the preparation, promulgation and enforcement of regulations to control industrial health hazards.

Bills Introduced.—S. 1808, introduced by Senator Johnson, Colorado, provides for temporary appointment as officers in the Army of the United States of members of the Army Nurse Corps, female persons having the necessary qualifications for appointment in such corps, female dietetic and physical therapy personnel of the Medical Department of the Army, exclusive of students and apprentices, and female persons having the necessary qualifications for appointment in such department as female dietetic or physical therapy personnel. S. 1809, introduced by Senator Johnson of Colorado for Senator Reynolds, North Carolina, proposes to remove the limitation on the right to command of officers of the Dental Corps of the Army, the

existing limitation restricting such officers to command in the Dental Corps. S. 1813, introduced by Senator Wagner of New York for himself and for Senator George of Georgia and Senator Clark of Missouri, proposes to amend title II of the Social Security Act so as to give insurance credits under the federal old age and survivors' insurance provisions of that act for military service. S. 1778, introduced by Senator Langer, North Dakota, is similar in objective to the preceding bill. H. R. 4447, introduced by Representative Allen, Louisiana, proposes the appropriation of an amount not in excess of \$5,000,000 to construct in or near Gum Springs, La., a 1,000 bed patient veterans' hospital for the diagnosis, care and treatment of neuropsychiatric disabilities. H. R. 4448, introduced by Representative Domengeaux, Louisiana, proposes to provide for free government inspection of sea food. H. R. 4418, introduced by Representative Walter, Pennsylvania, provides that persons who are otherwise qualified, but who have physical defects which will not interfere with the performance of general or special duties to which they may be assigned, may be issued appointments in the Naval and Marine Corps Reserve and ordered to active duty.

STATE MEDICAL LEGISLATION

Kentucky

Bill Enacted.—H. 259 was approved by the governor, March 18, so amending the narcotic drug act as to define narcotic drugs to include isonipecaïne.

Mississippi

Bills Introduced.—Senate Concurrent Resolution 32 and House Concurrent Resolution 41 propose to provide for the appointment of a special committee to consider the desirability of enacting a workmen's compensation act in the state and to report its conclusions to the 1946 session of the legislature. S. 384 proposes to authorize the board of supervisors of Harrison County to provide medical and hospital treatment and care for any resident of the county who, because of indigency, cannot obtain the care required.

North Dakota

Bill Introduced.—S. 5-X proposes to authorize the state health department in cooperation with the University of North

Dakota to obtain blood from donors in the state, to purchase equipment necessary for processing that blood, to process the blood, and to furnish blood plasma so processed free of charge to the people of the state.

Rhode Island

Bill Introduced.—H. 834 proposes to permit practicing assistant pharmacists who have passed examinations identical with the examinations given for registered pharmacists and who have been employed as duly qualified registered assistant pharmacists for ten or more years to conduct or manage pharmacies.

Virginia

Bills Enacted.—The following bills have been approved by the governor: H. 29, repealing the existing medical practice act and enacting an entire new act, which, among other things, gives representation on the board of medical examiners to the homeopaths, osteopaths, chiropractors and naturopaths. All applicants for licenses to practice any form of the healing art must pass examinations to be given by the board in anatomy, histology, pathology, physiology, bacteriology or microbiology, biochemistry, diagnosis, sanitation and hygiene; S. 165, to require every state agency authorized to conduct examinations of applicants for licenses to practice any profession to file a copy of each examination within a period of ten days after it is given with the secretary of the commonwealth, who must preserve it for at least two years as a public record accessible to any person; S. 170, to amend the narcotic drug act so as to define a narcotic drug as to include isonipecaïne; S. 219, so to amend the laws relating to venereal diseases as to require public health officers to investigate all cases of lymphogranuloma inguinale or granuloma inguinale as well as syphilis, gonorrhea and chancroid, to authorize health officers to require persons suspected of being infected with any of those diseases to submit to examination and to make it a misdemeanor for any person found infected with any of those diseases to fail to take the treatment prescribed by a competent physician or to fail to continue treatment until cured; and S. 234, to prohibit the retail sale or distribution, except on the prescription of a doctor of medicine, dentist or veterinarian, of hormones or hormone drug preparations.

WOMAN'S AUXILIARY

Minnesota

The Goodhue County auxiliary and Nicollet-LeSueur counties made cancer dressings for Our Lady of Good Counsel Free Cancer Home in St. Paul.

The Hennepin County auxiliary recently gave its annual Silver Tea for Sarahurst rehabilitation home for patients from Glen Lake Sanatorium.

Mrs. F. S. McKinney, state president of Minnesota, was guest speaker at the November meeting of Washington County auxiliary.

Mississippi

The Gulfport unit of the Woman's Auxiliary of the Harrison-Stone-Hancock Counties Medical Society celebrated its twentieth anniversary recently at the home of the organizer, Mrs. D. K. Williams, with Dr. Emma Gay, a charter member, as co-hostess.

The Woman's Auxiliary of Clarksdale and Six Counties Medical Society had its semiannual meeting in November. Dr. E. LeRoy Wilkins, president of the state medical society, gave a talk on juvenile delinquency.

North Carolina

Mrs. Reuben McBrayer, president of the Hoke County auxiliary, has given an emergency medical kit in memory of her husband's father, Dr. L. B. McBrayer.

Pitt and Wayne County auxiliaries held meetings recently, and Wake County auxiliary held open house December 10 at the home of Dr. and Mrs. M. D. Hill for Wake County doctors and their wives.

Pennsylvania

Pennsylvania reported at the national board meeting that it had the largest number of *Hygeia* and *Bulletin* subscriptions. It is also working actively against the Wagner-Murray-Dingell bill.

Beaver County voted to give \$50 to the Passavant Home, \$50 to the Beaver County Tuberculosis Sanitarium, \$10 for a tuberculosis bond and \$5 to the Salvation Army.

Berks County auxiliary made surgical dressings in November and gave seventy-five garments to the Needlework Guild.

Cambria County auxiliary had a dinner in Johnstown recently.

Erie County auxiliary heard Dr. Martin M. Malinex of Brooklyn discuss "Congenital Heart Disease and Rheumatic Fever" at the Nurses Home at Hamot Hospital in Erie.

Lehigh County auxiliary held its annual reciprocity tea recently in Allentown. Congressman Charles Gerlach explained the Wagner-Murray-Dingell bill and pledged himself "to do all in his power to defeat the insidious and un-American provisions of the bill."

Philadelphia County, Montgomery County, Schuylkill County and Franklin County held interesting meetings recently. At a fashion show held by the Philadelphia County auxiliary \$600 was netted.

Westmoreland County auxiliary voted to contribute \$150 to the medical benevolence fund.

Medical News

(PHYSICIANS WILL CONFERR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

University News.—Dr. F. P. Ludueña, adjunct professor of pharmacology of the medical faculty of the University of Rosario, Argentina, has become assistant professor in the department of pharmacology of the Stanford University School of Medicine, San Francisco.

Pharmacists Arrested in Drug Sale.—More than 40 men, most of them pharmacists, have been arrested in connection with the sale of a drug to enable army draftees to evade induction, newspapers reported March 16. According to the report, state and army officials conferred on plans to halt the sale of the drug, which army men said causes apparent mental and physical unfitness for military service on the part of men taking it. Pharmacists arrested for its sale are being charged with dispensing it without a prescription, it is reported.

Dr. Lyttle Named Professor of Pediatrics.—Dr. John D. Lyttle, since 1921 a member of the faculty of Columbia University College of Physicians and Surgeons, New York, has been appointed professor of pediatrics at the University of Southern California School of Medicine, Los Angeles, and director of pediatrics of the Children's Hospital, effective April 1. Dr. Lyttle graduated at Cornell University Medical College, New York, in 1916. He joined Columbia in 1921 as an instructor, subsequently serving as associate and assistant clinical professor of pediatrics.

Physicians Needed.—The Los Angeles County Civil Service Commission announces that applications for resident physicians (radiology) are now being accepted. Applications are to fill positions in the Los Angeles County Hospital. Eligible physicians are those who are 21 to 55 years of age, graduates of an approved medical school, who have completed at least nine months' internship in an approved hospital. Applications will also be accepted from interns prior to the completion of their internship. There will be no written examination. Applications must be filed on or before April 15. Additional information may be obtained from the Los Angeles County Civil Service Commission, Room 102, Hall of Records, Los Angeles 12.

INDIANA

Society News.—The La Porte County Medical Society was addressed at La Porte, February 17, by Rolla N. Harger, Ph.D., Indianapolis, on "Domestic and Industrial Poisonings."

—At a meeting of the St. Joseph County Medical Society in South Bend recently Dr. Louis N. Katz, Chicago, spoke on the "Principles in the Diagnosis and Treatment of Peripheral Vascular Diseases."

Industrial Health Conference.—The Indiana State Medical Association will conduct its second industrial health conference at the Indiana University School of Medicine, Indianapolis, April 19-20. Among the speakers on the program will be:

- Dr. Jacob T. Oliphant, Farmersburg, Obligations of the State Medical Association in the Training of Industrial Physicians.
- Dr. Willis D. Gatch, Indianapolis, Obligations of the University in the Training of Industrial Physicians.
- Dr. Roscoe L. Sensenich, South Bend, Postwar Industrial Health Problems.
- Dr. Stewart L. Rankin, Charlestown, Medical Records and Record Keeping in Industry.
- Samuel M. Peck, senior surgeon, U. S. Public Health Service Reserve, Occupational Aene.
- Dr. Sumner L. S. Koch, Chicago, Treatment of Hand Injuries.
- Dr. John H. Foulger, Wilmington, Del., Preventive Medicine in Industry.
- Dr. Victor G. Heiser, New York, Value of Industrial Medical Services in Industry.
- Dr. Dudley A. Irwin, Pittsburgh, Prevention and Treatment of Silicosis with Aluminum.
- Dr. Kenneth E. Markuson, Lansing, Mich., A New Technic in Drawing Blood for Serodiagnostic Tests: Use of the Hemospast.
- Dr. Oscar A. Sander, Milwaukee, Lung Changes in Electric Arc Welders.
- Dr. Verne K. Harvey, Washington, D. C., Present Day Employment of Physically Handicapped Under Federal Civil Service.
- Dr. Harold A. Vonachen, Peoria, Ill., Community Organization for Rehabilitation and Recemployment.

The program will include a symposium on "Rehabilitation and Employment of the Handicapped Veteran," with Col. Anthony J. Lanza, M. C., A. U. S., as the moderator.

KENTUCKY

Medical Students Examine Domestic Employees.—Students of the University of Louisville School of Medicine are examining domestic employees in a program for the examination of workers conducted by the medical school and partly financed by the Louisville Tuberculosis Association. According to the *Bulletin* of the National Tuberculosis Association, blood pressure and blood samples for the Kahn test are taken and the Snellen vision test made. An examination of the eye, ear, nose and throat and dental examination, urinalysis, cervical smears and blood analyses are included in the work done by the students. Chest fluoroscopy is made under the supervision of a physician in charge of the clinic, and the results are recorded on the patient's history blank. On completion of the work, physicians in charge of the clinic go over the results.

MASSACHUSETTS

New Dean of Boston University.—Dr. Charles F. Branch, professor of pathology, Boston University School of Medicine, has been appointed dean of the school to succeed Dr. Bennett F. Avery, who resigned to become director general of public health of Iran. Dr. Branch, a graduate of the University of Vermont College of Medicine, Burlington, in 1923, has been a member of the teaching staff of the school for eighteen years, serving as professor of pathology since 1932.

Final Commencement of Harvard Dental School.—On March 23, fifteen army students, sixteen navy and seven civilian students graduated at Harvard Dental School, the last graduates of the oldest university dental school in the United States. On March 31, responsibility for dental education and research at Harvard was assumed by the Harvard School of Dental Medicine, which at the end of four years will confer the degree of D.M.D. on its graduates (*THE JOURNAL*, May 15, 1943, p. 187).

Warren Triennial Prize Awarded.—The Warren Triennial Prize, awarded through the Massachusetts General Hospital, Boston, has been presented for 1943 to Dr. David G. Cogan, V. Everett Kinsey, Ph.D., and Erwin O. Hirsch, B.A., for their essay entitled "Physiological Studies on the Cornea." An essay entitled "Studies on Traumatic Shock" by Dr. Everett I. Evans, Richmond, Va., was awarded honorable mention in the competition. The prize was founded by the late Dr. J. Mason Warren in memory of his father, Dr. John C. Warren, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation considered worthy of a premium on some subject in physiology, surgery or pathologic anatomy, the arbiters being the executive committee of the Massachusetts General Hospital. The amount of the prize for 1943 was \$500.

MICHIGAN

Changes in Health Officers.—Dr. John K. Altland, Hastings, was to resume his position as director of the Barry County Health Department on March 16, newspapers reported. Dr. Altland has been serving with the coast guard but has now been placed on the inactive list.

Physician Sentenced as Spy.—Dr. Fred W. Thomas, Detroit, on March 16 was sentenced to sixteen years in federal prison following his conviction of conspiracy to violate the wartime espionage act. The sentence was passed by federal Judge Edward J. Moinet, after the conviction of Dr. Thomas two weeks previously by a federal court jury. Newspapers stated that the physician was accused of supplying espionage information on war production and troop movements and ingredients for the manufacture of invisible ink to Miss Grace Buchanan-Dineen, described by the federal bureau of investigation as leader of the espionage ring.

Plasma Program to Be Expanded.—During a recent special session of the legislature, \$250,000 was appropriated to augment the plasma program conducted by the state department of health. The project includes the enlarging of facilities in the state laboratories. New construction is to provide an additional 3,900 square feet of floor space which, according to the state department of health, will permit the production of four times the amount of plasma produced heretofore. The plasma program was launched in the state last September and has now been extended to thirty-three Michigan communities, the service including the establishment of plasma reserves in local hospitals. Physicians are supplied with the plasma, free of charge, for the treatment of civilian patients. One traveling clinic, a physician and four nurses, is also a part of the program, and present plans call for the commissioning of two more units.

MINNESOTA

Dr. Herrell Honored by Chamber of Commerce.—Dr. Wallace E. Herrell, assistant professor of medicine, University of Minnesota Graduate School, Rochester, was recently presented with the distinguished service key of the Rochester Junior Chamber of Commerce for "outstanding service in 1943." The report indicated that the award went to Dr. Herrell for his work on penicillin.

MISSOURI

Raymond McIntyre Enters Military Service.—Mr. Raymond McIntyre, St. Louis, executive secretary of the Missouri State Medical Association, has been granted a leave of absence from the association to accept a commission in the U. S. Navy as lieutenant (jg).

Physician Provides Bequest for Hospital.—Dr. Caleb A. Ritter, who at the time of his death January 31 was reported to be resident in the Trinity Lutheran Hospital, Kansas City, left a trust fund to the hospital to be used for the maternity department and to be known as the Dr. C. A. Ritter bequest.

Symposium on Degenerative Diseases.—The research unit of the St. Louis City Infirmary and the Washington University School of Medicine, St. Louis, cooperated in a symposium at the infirmary, March 24, on degenerative diseases. Among the speakers participating were:

- Dr. Irvine H. Page, Indianapolis, Arteriosclerosis and Lipid Metabolism.
- Dr. Lester R. Dragstedt, Chicago, The Role of the Pancreas in Arteriosclerosis.
- Dr. Edward J. Stieglitz, Washington, D. C., Difficulties in Clinical Recognition of Degenerative Diseases.
- Dr. William J. Kerr, San Francisco, Correlation of Clinical Knowledge in the Treatment of Degenerative Diseases.

At a dinner session, the speakers included George Reeves Throop, LL.D., chancellor, Washington University, Dr. Frank Fremont-Smith, medical director, Josiah Macy Jr. Foundation, New York, and Dr. William deB. MacNider, Kenan research professor of pharmacology, University of North Carolina School of Medicine, Chapel Hill, who spoke on "Age: Change and Adjustment."

NEW JERSEY

Hospital Receives Physician's Library.—The Nathan and Miriam Barnett Memorial Hospital, Paterson, has been presented with the library, medical and surgical supplies and office equipment of the late Dr. David H. Mendelsohn, who at the time of his death was attending surgeon at the hospital. According to the *Bulletin* of the Passaic County Medical Society, the library consisted of more than 200 textbooks and 5 bookcases. The equipment consisted of an operating table, autoclave, instruments, microscope and other articles. An oil painting of Dr. Mendelsohn, the work of Henry J. Wolff, was recently dedicated and hung in the solarium of the hospital.

State Medical Meeting.—The Medical Society of New Jersey will hold its annual meeting at the Hotel Claridge, Atlantic City, April 25-27, under the presidency of Dr. Ralph K. Hollinshead, Westville. One general session will be addressed Tuesday afternoon by Drs. Louis H. Bauer, Hempstead, N. Y., Walter H. Judd, Washington, D. C., and Robin C. Buerki, Philadelphia, on "Postwar Planning." "A Country Doctor in Washington" and "Postwar Medical Education" respectively. Another will be addressed Thursday morning by Mr. E. A. van Steenwyk, Philadelphia, on "Can Voluntary Health Insurance Meet the Need?" and Capt. Don S. Knowlton (MC), U. S. Naval Reserve, "The Marines Have Landed." At the banquet Wednesday evening, Dr. Samuel Emlen Stokes, Moorestown, will be toastmaster and Dr. James E. Paullin, Atlanta, President of the American Medical Association, will discuss "Place of the Physician in the Postwar World." Among other speakers on the program will be:

- Lieut. Col. Henry A. Christian, and Major Charles S. Morrow, M. R. C., Diagnosis of Cardiac Abnormalities Through the Use of Positional Electromyograms.
- Dr. Truman G. Schnabel, Philadelphia, Bronchiogenic Carcinoma.
- Dr. George Morris Piersol, Philadelphia, The Diagnosis of the Continued Fevers Commonly Encountered in General Practice.
- Dr. Martin E. Rehffuss, Philadelphia, Medical Treatment of Biliary Tract Disease.
- Dr. William O. Wuester Jr., Elizabeth, Cancer of the Lip and Skin.
- Dr. Benjamin W. Carey, Pearl River, N. Y., Newer Aspects of Chemotherapy.
- Dr. Murray H. Bass, New York, Lipoid Diseases.
- Dr. William H. Hahn, Newark, Role of Vitamins in Physiology of Vision.
- Dr. Richard D. Swain Jr., Newark, Oral and Ocular Manifestations of Head Trauma.
- Dr. Henry B. Orton, Newark, Infection of the Neck.
- Dr. Wilbur Emory Burnett, Philadelphia, Postoperative Care of the Gallbladder Patient.
- Major Champ Lyons, M. C., A. U. S., Treatment of Burns, Shock and Hypoproteinemia.

- Dr. Alfred Meurlin, East Orange, Analysis of One Hundred Puerperal Deaths in Essex County.
- Dr. Hammell P. Shipp, Camden, The Abortion Problem.
- Dr. Julius Levy, Newark, The Federal Aid Program.
- Dr. Lyman Burnham, Englewood, The Rh Factor.
- Dr. Alan F. Guttmacher, Baltimore, Social Problems of Obstetrics and Gynecology.
- Dr. Sigurd W. Johnsen, Passaic, Common Disorders of the Digestive Tract.
- Dr. George T. Pack, New York, Metabolic Disturbances Associated with Cancers of the Gastrointestinal Tract.
- Capt. J. Edward Berk, M. R. C., Gastrointestinal Problems in the Army.
- Dr. Julius Gerendasy, Elizabeth, Diagnostic Pitfalls in Proctology.

NEW YORK

Personal.—Dr. Albert J. Colton, Buffalo, who invented the card index system bearing his name, will observe his eightieth birthday, April 17.—The New Rochelle Medical Society gave a dinner on February 15 in honor of Dr. Frank B. Littlewood, who recently completed fifty years in the practice of medicine.

Graduate Lectures.—A series of lectures on general medicine opened March 30 for the medical staff of Memorial Hospital of Greene County, Catskill. Dr. Laird S. Van Dyck, New York, delivered the first lecture, on "Diagnosis and Treatment of Common Skin Diseases." Others in the series will be:

- Dr. David K. Miller, Buffalo, What Do We Know About Vitamins?
- April 27.
- Dr. Wallace B. Hamby, Buffalo, The Diagnosis and Treatment of Head Injuries, May 25.
- Dr. A. Wilbur Duryee, New York, Circulatory Disturbances in the Extremities, June 29.

Dr. Byron P. Stookey, New York, addressed the Broome and Tioga County Medical societies in Binghamton, March 14, on "Low Back Pain."

New York City

Pharmacy and Public Health.—On April 10 the New York Branch of the American Pharmaceutical Association will meet in Keating Hall on the Fordham University Campus under the auspices of the university's college of pharmacy. The theme of the meeting will be "Pharmacy and Public Health" and the speakers will include:

- Mary Grace, Ph.G., New York, The Hospital Pharmacist's Role in Public Health.
- Carl R. Addinall, Ph.D., Rahway, N. J., The Pharmaceutical Manufacturer's Contribution to Public Health and the War Effort.
- Dr. Walter Clarke, New York, The Pharmacist's Part in the Social Hygiene Program.
- Ivor Griffith, Sc.D., Philadelphia, The Retail Pharmacist's Part in Public Health and the War Effort.

Program to Reduce Home Accidents.—A series of ten teacher training lectures on home safety opened in various health centers on March 20 under the auspices of the city department of health, the Greater New York Safety Council and the National Safety Council. The lectures will continue weekly until June 9 and will serve as a training course for health department personnel to instruct others in home safety. During the course all students will study and report causes of home accidents. The project is financed by the National Safety Council in the expectation that it will develop a pattern of effective home accident prevention methods which subsequently may be used throughout the United States. The lectures, with visual demonstrations of home accident causes and methods of prevention, have been developed, and a teaching staff of about 40 recruited, organized and trained by the Greater New York Safety Council. Classroom and teaching facilities are provided by the city department of health.

OHIO

Tri-State Medical Meeting.—The seventy-first annual meeting of the Northern Tri-State Medical Association will be held at the Commodore Perry Hotel, Toledo, April 11. The meeting will be opened with addresses by Drs. Paul M. Holmes, president, Toledo Academy of Medicine, and E. Benjamin Gillette, Toledo, president of the Northern Tri-State Medical Association. Other speakers will include:

- Dr. Gordon B. Myers, Detroit, Chemotherapy.
- Dr. Robert A. Hettig, Ann Arbor, Mich., Postwar Medical Problems Relative to Tropical Diseases.
- Drs. Karl D. Figley, Toledo, Milton B. Cohen, Cleveland, and Stanley W. Insley, Detroit, The Management of the Asthmatic.
- Dr. Henry C. Hesselstine, Chicago, Caudal Anesthesia.
- Dr. Marion A. Blankenhorn, Cincinnati, Diagnosis and Treatment of Medical Shock.
- Dr. Nathan S. Davis, Chicago, The Role of Biochemistry in the Etiology and Treatment of Cardiovascular Renal Disease.
- Dr. Walter E. Dandy, Baltimore, Diagnosis and Treatment of Ruptured Intervertebral Disks.
- Dr. Wallace E. Herrell, Rochester, Minn., Penicillin.

The Northern Tri-State Medical Association is composed of the states of Indiana, Michigan and Ohio.

SOUTH CAROLINA

State Medical Meeting.—The annual session of the South Carolina Medical Association will be held at the Columbia Hotel, Columbia, April 11-12, under the presidency of Dr. William Atmar Smith, Charleston. A banquet session will be addressed by Dr. Harry S. Mustard, professor of public health practice and director of the De Lamar Institute of Public Health of Columbia University College of Physicians and Surgeons, New York. Among other speakers on the program will be:

- Dr. Mylnor W. Beach, Charleston, Trend of Immunization in Present Day Pediatrics.
- Dr. William H. Kelley, Charleston, Specific Chemotherapy in Bacterial Infections.
- Dr. James C. McLeod, Florence, The Use of Sulfonamides in Surgery.
- Dr. Edgar A. Hines, Jr., Rochester, Minn., The Prevention and Treatment of Thrombosis and Embolism.
- Dr. Roderick MacDonald, Rock Hill, Headache from an Eye, Ear, Nose and Throat Standpoint.
- Dr. Joseph D. Guess, Greenville, Practical Obstetrics.
- Dr. Roger G. Doughty, Columbia, The Problem of Ruptured Intervertebral Disks.
- Dr. Oscar Z. Culler, Orangeburg, The Treatment of Diabetic Coma.
- Dr. Thomas B. Sprunt, Baltimore, The Management of Thyrotoxicosis.

TENNESSEE

State Medical Meeting.—The Tennessee State Medical Association will hold its one hundred and tenth annual meeting in the Noel Hotel, Nashville, April 11-13, under the presidency of Dr. Oval N. Bryan, Nashville. According to the preliminary program, the meeting will open with an evening session to be addressed by Dr. Bryan, Dr. James E. Paullin, Atlanta, President of the American Medical Association, and Brig. Gen. Hugh J. Morgan, consultant to the Surgeon General of the army. Among the guest speakers will be:

- Dr. Frank E. Whitacre, Sylvania, Ohio, Some Complications of Obstetrics as Seen in China.
- Dr. Louis A. Buie, Rochester, Minn., A Colored Motion Picture of Normal and Abnormal Conditions in the Terminal Portion of the Colon, with Comments.
- Dr. Austin E. Smith, Secretary, Council on Pharmacy and Chemistry, American Medical Association, Chicago, Drugs on the Market.
- Dr. Carl M. Peterson, Secretary, Council on Industrial Health, American Medical Association, Chicago, Industry Needs the Physician.
- Dr. J. R. Bromwell Branch, Macon, Ga., Benign Obstructive Lesions in the Right Lower Quadrant.
- Dr. Charles H. Mann Jr., New York, Practical Aspects of the Management of Lymphogranuloma Venereum.

The program will conclude with a symposium on the venereal disease problem by Drs. Herman Spitz, Nashville; J. Logan Morgan, Memphis; Rudolph H. Kampmeier, Nashville; Emmett R. Hall, Memphis, and Dr. Mann.

TEXAS

Changes in Health Officers.—Dr. Thomas P. Andrews has resigned as health officer of Brownsville. Dr. Charles A. Wyatt, Marshall, was recently appointed health officer of Harrison County.

New Lectureship at University of Texas.—An annual lectureship under the auspices of the Phi Beta Pi medical fraternity has been established at the University of Texas Medical Branch, Galveston. The first lecture was given on March 25 by Theophilus S. Painter, Ph.D., professor of zoology at the University of Texas, Austin, entitled "A Cytologist Looks Forward."

Pediatric Program.—Dr. Arild E. Hansen, professor of pediatrics, University of Texas Medical Branch, Galveston, and director of the school's child health program, is arranging a pediatric conference at the school, April 7-8, with a group of special speakers, to survey current pediatric problems in the Southwest. On this occasion the first of a series of lectures on pediatrics, sponsored by the William Buchanan Foundation of Texarkana, will be given by Dr. Irvine McQuarrie, professor of pediatrics, University of Minnesota Medical School, Minneapolis.

UTAH

Industrial Hygiene Physician Goes to Washington.—Dr. John L. Jones, Salt Lake City, has resigned as director of the division of industrial hygiene, Utah State Board of Health, to become chief of the medical services of the Washington State Health Department, Seattle, effective March 1. A graduate of Harvard Medical School and the Harvard School of Public Health, Dr. Jones in 1935 served as state health commissioner of Utah. From 1939 to 1941 he was given leave of absence to develop the state's first industrial hygiene program and carry out studies in cooperation with the U. S. Public Health Service. He became director of the new division of industrial hygiene in 1941.

WEST VIRGINIA

Former Health Commissioner Named Medical Director of Compensation Fund.—Dr. William T. Henshaw, Charleston, has been named by Charles L. Heaberlin, state compensation commissioner, as acting medical director for the Workmen's Compensation Fund to succeed Dr. Ernst F. Gott, who will resume private practice in Charleston. Dr. Henshaw served for several years as state health commissioner and has been medical director for the Dravo Construction Company since 1933. Work on the Hinton dam, which is being constructed by the Dravo Corporation, has been discontinued temporarily because of the shortage of vital materials.

Forum on Tropical Diseases.—A feature of the annual meeting of the West Virginia State Health Conference on May 1-2 at Charleston will be a forum on tropical diseases. Various aspects of the diseases to be discussed include clinical diagnosis and therapeutics, laboratory and field control, and etiology and epidemiology. All sessions of the conference, which is a joint meeting of the West Virginia Public Health Association and Health Officers Conference, will be held at the Daniel Boone Hotel. In addition to the forum on tropical diseases there will be the following speakers:

- Lucius F. Badger, surgeon, U. S. Public Health Service, Newer Methods of Communicable Disease Control.
- Dr. Philip E. Blackerby, Louisville, Ky., Rural Health.
- Hortense Hilbert, New York, Nursing.
- Dr. Arthur J. Lesser, Washington, D. C., Emergency Maternal and Infant Care Program.
- Dr. Udo J. Wile, Ann Arbor, Mich., Venereal Disease Control.

WISCONSIN

Examination for Medical Examiners.—The Milwaukee County Civil Service Commission announces an examination for the position of medical examiner, applications to be filed on or before April 5. The initial salary will be about \$390 a month, and acceptance will be determined by an evaluation of training and experience plus an oral interview. Qualified citizens of the United States are eligible. Applicants must be graduates of an approved school and be eligible for a license to practice medicine in Wisconsin. They must have not less than three years of specialized training, exclusive of internship, in an accredited institution or department of pathology, the training to have included not less than one year of various phases of clinical pathology and not less than two years in the department of pathologic anatomy. Additional information may be obtained from the Milwaukee County Civil Service Commission, Room 206, Courthouse, Milwaukee.

Sessions on Industrial Health.—The State Medical Society of Wisconsin, in cooperation with the industrial hygiene unit of the state board of health, has planned a series of afternoon and early evening conferences to be held in six industrialized areas of the state:

- April 12, Kenosha, Elks Club.
- April 19, Manitowoc, Manitowoc Hotel.
- April 25, Oshkosh, Hotel Raulf.
- May 2, Green Bay, Hotel Northland.
- May 16, Janesville, Y. M. C. A.
- May 18, Wausau, Hotel Wausau.

Two teams have been chosen: one from Madison to handle the Oshkosh, Wausau and Janesville meetings; the other from Milwaukee to lecture at Kenosha, Manitowoc and Green Bay. Members of the Madison team are Drs. Henry L. Greene, Chester M. Kurtz, Vincent W. Koch, Helen A. Dickie, Erwin R. Schmidt, Albert R. Tormey and Garrett A. Cooper. Members of the Milwaukee group are Drs. Chester C. Schneider, Elwood W. Mason, Millard Tufts, Arthur A. Schaefer, Joseph M. King, Simpson M. Markson and Oscar A. Sander. Included among the topics of discussion will be:

- Treatment of Sprains and Strains.
- Cardiac and Hypertension in Industry.
- Industrial Disease of the Lungs.
- Treatment of Burns.
- Treatment of Injuries to the Hands and Feet.
- Prevention and Treatment of Industrial Dermato Health Hazard in Welding.

Among others, Dr. Paul A. Brehm, Madison, supervisor of the industrial hygiene unit of the state board of health, will speak on the importance of postwar planning in relation to the rehabilitation of war veterans in industry.

HAWAII

Dr. McNeil Resigns as Mental Hygiene Director.—Dr. Edwin E. McNeil, Honolulu, who left Hawaii last September on vacation and a six months leave of absence, has resigned as director of the bureau of mental hygiene, of the Territory of Hawaii Board of Health, effective February 15. Dr. William M. Shanahan, Honolulu, has been acting director of the bureau.

GENERAL

National Negro Health Week.—The week beginning April 2 has been designated National Negro Health Week to promote the health and well-being of Negroes. A national observance will be carried out under the auspices of the U. S. Public Health Service.

Wartime Public Health Conference.—The American Public Health Association announces that its second wartime public health conference and its seventy-third annual business meeting will be held in the Pennsylvania Hotel, New York, October 3-5. Meetings of related organizations will take place on October 2. The scientific program will be devoted to wartime emergency matters as they affect public health.

Medals Awarded for Orthopedic Exhibits.—At the recent annual meeting of the American Academy of Orthopaedic Surgeons three gold medals were awarded, one to Dr. James E. M. Thomson, Lincoln, Neb., for his exhibit showing originality of presentation and research problems entitled "Local Shock Influence of Novocain Sympathetic Block." Another medal for scientific importance and information went to Dr. William T. Green, Boston, for his exhibit on "Skeletal Manifestations of Neurofibromatosis" and a medal for clinical value to Col. John L. Gallagher, M. C., U. S. Army, for his exhibit on "Compression Therapy Dressings." Dr. Guy W. Leadbetter, Washington, D. C., was chosen president-elect of the academy and Dr. E. Bishop Mumford, Indianapolis, was inducted into the presidency. Other officers include Drs. H. Earle Conwell, Birmingham, Ala., vice president; Fremont A. Chandler, Chicago, treasurer, and Myron O. Henry, Minneapolis, secretary. The academy will hold its next annual meeting at the Palmer House, Chicago, Jan. 21-24, 1945.

Panel Named to Assist in Placing of Veterans in Industry.—The Industrial Hygiene Foundation has announced that a panel of five members will function as an advisory board for the placement of veterans in industry. The panel consists of Dr. Clarence D. Selby, medical consultant, General Motors Corporation, Detroit; Col. John H. Andrews, executive officer, Reemployment Division, National Selective Service System, Washington, D. C.; Dr. Harley L. Krieger, medical director, Ford Motor Company, Detroit; A. A. Hendrix, personnel director, Eastern Aircraft Division, General Motors Corporation, Linden, N. J., and I. Dent Jenkins, personnel manager, Harrison Radiator Division, General Motors Corporation, Lockport, N. Y. The action was taken after the release of the comprehensive report by the Industrial Hygiene Foundation on "Putting the Disabled Veteran Back to Work." It is stated that the five man panel will serve the foundation's membership and industry generally as an unofficial vehicle for the exchange of practical experience and information.

Award to Encourage Writing of Medical Books for Laymen.—W. W. Norton & Company has established a new literary award to be known as the Norton Award to consist of \$3,500 and "offered to encourage the writing of books on medicine and the medical profession for the layman." According to an announcement the publishers, whose list is characterized by some authoritative books on medical subjects, feel that medical men, like other scientific workers, write for one another for the most part, and the layman is consequently too often forced to resort to nonprofessional popularizers. In announcing this award they have in view the need for books on various aspects of medical science, written by professional workers in the medical field in such a way as to interest the general reading public. The subject matter to be considered may be autobiography, biography, history of any phase of medicine, exposition of medical science or of medical theory. Complete information and entry blank for this award may be obtained by addressing the Norton Award, W. W. Norton & Company, Inc., 70 Fifth Avenue, New York 11. Final date for delivery of manuscripts is Dec. 31, 1944.

Chest Physicians Hold Regional Meetings.—The North Midwest Regional District of the American College of Chest Physicians will sponsor a meeting during the annual session of the Minnesota State Medical Association in Rochester, April 15. Among the speakers will be:

- Dr. Sidney A. Slater, Worthington, Minn., Practical Points in the Diagnosis of Pulmonary Tuberculosis.
- Dr. John F. Allen, Omaha, Development of Therapy in Tuberculosis During the Last Twenty-Five Years.
- Dr. Horton C. Hinshaw, Rochester, Present Status of Chemotherapy in Tuberculosis.
- Dr. Karl A. Danielson, Litchfield, Minn., "All Out" Tuberculosis Control by the Medical Profession.
- Dr. William L. Meyer, Sanator, S. D., Sarcoidosis.
- Dr. Leonard W. Moody, Bayfield, Wis., Case Reports.
- Dr. J. Winthrop Peabody, Washington, D. C., Transitory, Migratory Pulmonary Infiltrations Associated with Eosinophilia.

The New Jersey chapter will meet during the session of the Medical Society of New Jersey at the Hotel Claridge,

Atlantic City, April 26. The Ohio chapter will hold a luncheon session at the Deshler-Wallick Hotel, Columbus, May 3, in connection with the annual meeting of the Ohio State Medical Association.

LATIN AMERICA

Health Activities in Latin America.—The presence of high yielding Ecuadorian sources of quinine has been reported by William C. Steere, Ph.D., botanist attached to the U. S. Foreign Economic Administration mission in Quito, Ecuador. The high yielding plant is known as *Cinchona pitayensis*, or yellow bark, and was known previously only in Colombia. According to the Office of the Coordinator of Inter-American Affairs, wild bark is being brought out of the Ecuadorian forests, nurseries are developing plantations and factories in Quito are processing the bark for shipment to the United States.

Health Education.—A new motion picture on prevention of blindness entitled "Eyes for Tomorrow," produced by the Emerson Yorke Studio for the National Society for the Prevention of Blindness, will be released throughout Latin America under the auspices of the Office of the Coordinator of Inter-American Affairs. This version will be slightly altered to the original release in the United States and will have Spanish and Portuguese sound tracks. The film deals with the importance of antepartum care as a means of reducing the amount of blindness caused by syphilis and gonorrhea, the conservation of vision among school children, the use of sight-saving classes for children with seriously defective vision, the necessity for regular eye examinations, methods of treating glaucoma and trachoma and the eye hazards of industry.—Fifteen minute broadcasts four times a week of instruction in public health nursing were started recently in Bolivia.

Texas Physician Honored.—Dr. James L. Rentfro, Brownsville, was guest of honor at a banquet given by the Matamoros Medical Association, Tamaulipas, Mexico, in recognition of his work among the Latin American people on both sides of the Rio Grande. Dr. Roberto Perez M., president of the Matamoros Medical Association, presided at the dinner, which was attended by members of the profession from Texas and Mexico. Dr. Rentfro was presented with a certificate of merit signed by all members of the Matamoros Medical Association. Nelson R. Park, American consul, in a communication to the Department of State said that it is believed to be the first occasion on which the Matamoros doctors have honored a physician of Brownsville.

Medical Care for Sisal Workers.—Through an arrangement with Haiti's special health service, workers on the largest sisal plantation in the Western Hemisphere, known as the La Plantation Dauphin and located in Haiti, are being given special care under the Inter-American health and sanitation program. Physicians and engineers have been assigned to the project, which includes drainage of malarial swamps, improvement of water supply, establishment of small medical dispensaries and construction of additional housing facilities.

Personal.—Dr. Pablo Mirizzi, professor of clinical surgery of the University of Cordoba, Argentina, was recently presented by the University of Brazil with the degree of professor honoris causa. Special ceremonies were held at the National Faculty of Medicine at Rio de Janeiro.—Dr. Antonio Augusto de Almeida was recently elected president of the Medical Association of the Penido Burnier Institute, Campinas, São Paulo, Brazil.—Dr. José A. Hernández Ibáñez was chosen president of the Sociedad Cubana de Urología.—Dr. Alberto Recio-Forn, Havana, has been appointed minister of health of Cuba.

Tuberculosis Control.—Dr. Joseph S. Spoto, traveling representative of the Pan American Sanitary Bureau, reports in the *Bulletin* of the National Tuberculosis Association that an agreement has been reached by the federal health department of Mexico, the chief of party of Mexico, Office of the Coordinator of Inter-American Affairs and the Pan American Sanitary Bureau, to initiate a tuberculosis control program on the northern border of Mexico.

Deaths in Other Countries

Dr. William W. C. Topley, professor of bacteriology and immunology in the University of London and director of the division of bacteriology and immunology, London School of Hygiene and Tropical Medicine from 1927 to 1941, died January 21, aged 57. Dr. Topley devoted himself to the investigation of the factors which influence the spread of bacterial infection, and he invented and used entirely new methods for the study of epidemics in a population of laboratory mice. He was one of the first to use experimental methods in the study of epidemics, and he became an authority on the subject.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 26, 1944.

Canadian Neurologic Hospital in Britain

Establishment of a Canadian neurologic hospital for the troops in Britain was described at the Neurologic Section of the Royal Society of Medicine by Lieut. Col. J. C. Richardson. A new organization for dealing with neurologic patients was hailed as an important advance by the experts who took part in the discussion. The hospital was opened in 1940 with 200 beds for the treatment of head injuries. Needs not originally foreseen caused a steady expansion until in July 1943 the hospital had 600 beds, of which 150 were devoted to plastic surgery and 250 to neuropsychiatric maladies. The vast majority of the patients were Canadian soldiers and a considerable number Canadian airmen, but there were a few civilians and British service patients. Mild or severe mental disorders comprised 70 per cent of the cases, neurologic disorders without permanent mental disturbance 19 per cent and general medical disorders 8 per cent. The largest group (1,625 of 4,436 cases in three years) comprised psychoneuroses, about half the number being anxiety states. Patients with psychopathic personality numbered 646, psychoses 507 (chiefly schizophrenia 355 cases) and mental defectives 306. Of the cases of neurologic disease (828) the largest number (275) were cases of epilepsy and the next most numerous neurosyphilis (117).

The reported experience of the hospital was that neurology, psychiatry and neurosurgery, when planned as different components of one broad field of medical practice, offered the advantage of cooperative handling from the points of view of clinical investigation, diagnosis, treatment and postgraduate training. Such organization helped to break down the artificial barrier between the neurologist and the psychiatrist. Neuropsychiatry, it was pointed out, had been called on to play a much larger part in the selection of troops and allocation of personnel, including choice of candidates for commissions, than was originally anticipated. It was felt that the experience of this military neuropsychiatric division would be of lasting value in planning improvements in teaching hospitals and in directing attention to the psychiatric aspect of somatic illness.

In the discussion, Brig. Gen. George Riddoch, a British neurologist, said that this Canadian experiment would have an immense influence in planning for the future. The term which best described the hospital organization, he said, was "common sense." Sir Henry Tidy praised the liaison between neurology and psychiatry and stated that it would be to the mutual advantage of psychiatry and general medicine if they were as closely in touch.

Proposed Clinic for Advice in Infertile Marriages

The Social Biology Board of the British Social Hygiene Council proposes to establish in London a special clinic at which both partners of an infertile marriage can obtain expert advice. This clinic would be run on the same lines as the voluntary hospitals. Specialists would give their services voluntarily. An appeal is being made for the necessary funds. It is estimated that \$25,000 will be needed before the clinic can be equipped and started, but it is believed that by charging fees on a sliding scale to those who can afford them, the clinic would become self supporting within a comparatively short time.

The Social Biology Board has agreed to promote this undertaking under the supervision of its finance committee, provided

the public will contribute the funds necessary for establishing the clinic. It is intended that the clinic should be open to all patients, general practitioners, hospitals and other institutions desiring to make use of its services. It would be equipped with all the apparatus necessary for diagnosis and would be prepared either to supply treatment or to guide the treatment given by the patient's private doctor. In previous letters the concern felt at the approaching decline of our population has been shown. Means for opposing this tendency have been suggested, and this new clinic is evidently designed as a contribution to that end. The serious view taken by some as to the population decline is illustrated by the speech of W. R. Inge, formerly dean of St. Paul's Cathedral and a well known publicist. At a commemorative luncheon of the Ruskin Society he said that our period as a great and wealthy nation had come to an end. We would gradually slide back, he said, into the equivalent of preindustrial England, with a population of 20 million, mainly agriculturists and small tradesmen in the towns. But Dr. Inge's pronouncements have earned for him the sobriquet of "the gloomy dean," and his forecast is regarded by most observers here as an exaggeration of a real danger.

Campaign to Prevent Introduction of Malaria into Pacific Islands

A new campaign against the *Anopheles* mosquito which carries the malaria parasite is to be launched in the Southwest Pacific. If malaria should be introduced into the islands there, which at present are free from infection, it might cause as many casualties as the war against Japan. The scheme is to be financed under the colonial development and welfare act of 1940, and an initial grant of \$325,000 to cover three years' work has been made for the purpose. The *Anopheles* mosquito has hitherto been unknown in Fiji, Tonga, the Cook islands, the Loyalty islands, New Caledonia, the Gilbert and Ellice islands and Samoa. On the other hand, malaria is widely distributed in the islands to the west of Fiji. Since the outbreak of war the establishment of large garrisons and the increase of air and sea traffic between the islands has greatly increased the danger of introducing malaria into islands hitherto free from it.

A start has been made with entomologic surveys near shores and ports and reconnaissance surveys of all potential breeding grounds. Normal anti-mosquito work will be intensified and danger places will be cleared, drained and oiled when necessary. At the same time an engineer will prepare a program for mosquito control on a long term basis.

The Production of Penicillin

The discovery of penicillin was made by Prof. Alexander Fleming, assistant director of inoculation in the Research Department of St. Mary's Hospital. Its use was developed by Prof. H. W. Florey. It is now being produced in large quantities in this country and the United States. Professor Florey has gone to Russia to direct its production there. Directions for its production have been flown to China.

Up to the present time penicillin has been manufactured only by biologic, as distinct from chemical, methods. The Therapeutic Research Corporation of Great Britain, which was established in 1941, has organized a pooling of research among the principal British drug houses. Subsequently the Medical Research Council and the Committee on Medical Research in the United States arranged for the regular exchange of information between teams of workers in the universities and industrial laboratories and other institutions on both sides of the Atlantic.

The activities of the institutions and undertakings concerned are coordinated with the various interested ministers and service departments in the General Penicillin Committee of the Ministry

of Supply. There is nothing of the nature of a monopoly in this organization, but there is full mobilization of the appropriate skill and talent of Britain and the United States for speeding the solution of the problem of manufacture of the supplies of penicillin which are so vitally needed.

BUENOS AIRES

(From Our Regular Correspondent)

Feb. 19, 1944.

Medical Aid to Victims of San Juan Earthquake

San Juan, the capital of San Juan province, was demolished by an earthquake in January. More than 5,000 persons were injured. The government, the national department of public health and the medical profession gave immediate medical care to the victims and established the necessary hygienic measures to prevent epidemics. The physicians of Cordoba and Mendoza came immediately to San Juan. Dr. Eugenio A. Galli, head of the national department of public health, with a large group of public health physicians, left Buenos Aires as soon as the department was informed of the disaster and reached San Juan within twenty hours. The wounded were evacuated in airplanes to Mendoza province. Vaccination against epidemic diseases was administered. Large groups of medical delegations from the various states of Argentina as well as from Chile, Uruguay and Paraguay reached San Juan soon after the earthquake. Offerings of any kind of help were made by the American government and the American Red Cross and notes of condolence were sent to the victims' families.

Venereal Diseases in Buenos Aires

Dr. Osvaldo D. Dodero of Buenos Aires reviewed statistics of various hospitals in Buenos Aires on the frequency of syphilis before and after establishment of the laws of 1936 and 1937 for abolition of prostitution in Argentina. The figures in the accompanying table were included in the report.

Patients with Venereal Disease Treated in Buenos Aires

	1932	1937	1938	1939	1940	1941	1942	1943
At 16 public health dispensaries for men:								
Syphilis.....	3,048	1,015	1,102	782	802	716	739	396
Gonorrhea.....	8,929	5,948	5,009	4,525	4,307	4,286	4,556	2,938
Other venereal diseases	3,742	2,992	3,164	3,163	3,223	3,762	4,362	2,517
At 7 dispensaries in private hospitals:								
Syphilis.....	2,681	2,343	1,827	1,713	1,582	1,517	1,397	650
Gonorrhea.....	6,016	4,301	3,953	3,045	3,314	4,729	5,551	2,671
Other venereal diseases	3,974	6,345	7,613	6,519	6,014	7,171	7,531	3,591

The figures for 1943 were for the six months from January to June. The figures given reflect the good results of the law against prostitution. According to Dr. Dodero, syphilis has recently increased in some provinces in which enforcement of the law was neglected. Sexual delinquency has also diminished during the last five years, it is reported.

Pulmonary Emphysema

Drs. Egidio S. Mazzei and Jorge M. Remolar of the Instituto de Investigaciones of the Academia de Medicina of Buenos Aires have recently published a book on the clinical, x-ray and therapeutic aspects of pulmonary emphysema. The clinical symptoms, x-ray signs and bronchographic findings in functional (or reversible) anatomic and bullous pulmonary emphysema caused by bronchial obstruction are discussed. The conception of symptomatic emphysema in various diseases and the causal role of the valvular mechanism in the production of the disease by intrabronchial cancer, tuberculosis and other diseases of the respiratory tract are explained. Bullous emphysema is the last stage of obstructive emphysema with valvular mechanisms. The

differential diagnosis between this type of pulmonary emphysema and other diseases which simulate it is discussed. In the field of experimental pulmonary emphysema the conceptions of Paine of Minneapolis concerning the importance of the valvular mechanism during expiration are confirmed. Various chapters deal with the clinical symptoms of respiratory, circulatory and nervous complications and with the diagnosis, prognosis and therapy of the various forms of the disease.

Brief News

Members of the Academia Nacional de Medicina of Buenos Aires recently held a literary reunion in honor of Dr. Emile Sergeant, who recently died.

Dr. Leo Eloesser of the surgical clinic of the University of San Francisco recently returned home after having delivered exchange lectures in Argentina.

Dr. Germán Hugo Dickmann, head of the department of neurosurgery of the Rawson Hospital of Buenos Aires, recently left Argentina for the United States, at the invitation of Dr. Walter E. Dandy of the Johns Hopkins Hospital, Baltimore.

A donation was made by the Argentine public on Christmas day by sale of the so-called stamps of Navidad. The money thus collected is used in work against tuberculosis. In the 1942 collection \$12,500 was obtained by this means.

Literary festivities and social entertainment on January 4 celebrated the fiftieth anniversary of *La semana médica* of Buenos Aires. A special illustrated issue of this journal is in preparation as part of the celebration.

Literary festivities were held on Dec. 17, 1943 by the Society of the History of Medicine, a branch of the Asociación Médica Argentina, in homage to Robert Koch on the one hundredth anniversary of his birth. Drs. Pablo Osvaldo Wolff and Ramon Pardal made addresses in his memory.

Literary festivities are being prepared for Oct. 16, 1946 in honor of William T. G. Morton to celebrate the centennial of surgical anesthesia.

Dr. Egidio S. Mazzei was appointed president of the Sociedad de Medicina Interna, which is a branch of the Asociación Médica Argentina.

Deaths

Dr. Carlos Mainini, 64 years of age, who was a well known specialist on tuberculosis and the president of the Asociación Médica Argentina from 1936 to 1942.—Dr. Juan Raul Goyena, gastroenterologist, professor of clinical medicine of the Faculty of Medicine of Buenos Aires.—Dr. Desiderio Fernando Davel of Buenos Aires, founder in 1886 of the Pasteur Laboratory in Buenos Aires, who taught in Argentina the methods for prevention and therapy of hydrophobia.

Aerial Accident

A grave aerial accident occurred at the Mendoza airdrome involving a Chilean airplane which had been lent to Argentina by the Chilean government. Several physicians of both countries were among those killed in the accident.

Marriages

FRANCIS WILLOUGHBY TRAYNOR, Cumberland, Md., to Miss May Agnes Skinner of Charleston, S. C., in Baltimore, February 28.

JOSEPH COOKE ORMAN, Nashville, Tenn., to Miss Margaret Josephine Griesbeck of Memphis, February 21.

FAY ASHTON CARMINES, Odd, Va., to Miss Lillie Weeks Burns of Goldsboro, N. C., March 4.

JOSEPH J. GELLER, Elizabeth, N. J., to Miss Anna Marie O'Keefe in New York, December 21.

JOSEPH H. LUCINIAN to Mrs. B. Edna Roberts, both of Miami, Fla., December 25.

Ellis Saunders Allen Jr. ♂ Louisville, Ky.; University of Louisville School of Medicine, 1934; fellow of the American College of Surgeons; commissioned a first lieutenant in the medical corps, Army of the United States, May 5, 1942 and began extended active duty on May 15, 1942 at O'Reilly General Hospital, Springfield, Mo.; later promoted to captain; discharged on Sept. 9, 1943 because of physical disqualification; served on the staffs of the Kentucky Baptist Hospital, Methodist Deaconess Hospital and St. Anthony's Hospital; died in St. Vincent Hospital, Jacksonville, Fla., January 13, aged 35, of tumor of the brain.

James Mortimer Hoffman ✱ Pensacola, Fla.; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the Southeastern Surgical Congress, the South Atlantic Association of Obstetricians and Gynecologists and the Radiological Society of North America, Inc.; fellow of the American College of Surgeons; past president and secretary of the Escambia County Medical Society; served as president of the staff of the Pensacola Maternity Home and also on the regular staff; on the staff of the Pensacola Hospital; died January 19, aged 43, of coronary thrombosis.

James W. Ames, Detroit; Howard University College of Medicine, Washington, D. C., 1894; formerly a member of the state legislature; for many years a member of the county board of supervisors and chief diagnostician for the city board of health; medical director of the Trinity Hospital; died January 31, aged 79, of coronary heart disease and essential vascular hypertension.

David Elmer Arnold, San Francisco; College of Physicians and Surgeons of Chicago, 1893; served during World War I; formerly associated with the U. S. Veterans Bureau; died January 5, aged 76, of carcinoma of the prostate.

Homer Moon Austin ✱ Columbus, Ohio; Medical College of Ohio, Cincinnati, 1902; served during World War I; at one time chief of the division of hygiene of the state department of health; formerly superintendent of the Licking County Tuberculosis Sanatorium, Newark, Ohio, and assistant superintendent of the Clark County Tuberculosis Hospital, Springfield; on the staff of the Columbus State Hospital; died January 20, aged 73, of coronary occlusion.

Frank F. Barthmaier, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1910; served during World War I; on the staffs of the Women's Homeopathic Hospital and the Hahnemann Hospital, where he died recently, aged 56, of hypertensive heart disease.

Daniel Hughes Bell, Tacoma, Wash.; University Medical College of Kansas City, Mo., 1903; member of the Washington State Medical Association and the Pacific Coast Oto-Ophthalmological Society; past president of the Puget Sound Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; at one time superintendent of schools at Amarillo, Texas; on the staff of St. Joseph's Hospital and on the surgical staff of Tacoma General Hospital, where he died recently, aged 72, of cerebral thrombosis.

Daniel L. Bevan, Le Roy, Pa.; College of Physicians and Surgeons, Baltimore, 1908; member of the Medical Society of the State of Pennsylvania; at one time on the staff of the Robert Packer Hospital, Sayre; on the staff of the Tioga County General Hospital, where he died January 26, aged 62.

Robert Henry Black, Blackford, Ky.; University of Louisville Medical Department, 1886; died January 11, aged 82, of pneumonia.

Franklin Virginius Boyd, Opelousas, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1902; member of the Louisiana State Medical Society; director of St. Landry Parish health unit; formerly health officer of Lake Providence; past president of St. Landry Parish Medical Society; died January 30, aged 64, of cardiac dilatation.

Samuel S. Briggs, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1889; for many years professor of anatomy at his alma mater; died January 28, aged 76, of heart disease.

Nathan Stephen Brody, Brooklyn; University and Bellevue Hospital Medical College, New York, 1924; member of the Medical Society of the State of New York; served on the staffs of the Crown Heights, Madison Park and Israel Zion hospitals; died in Miami Beach, Fla., in January, aged 43.

Fletcher Hastings Brooks ✱ Surgeon, Lieutenant Commander, U. S. Navy, retired, San Diego, Calif.; Baltimore Medical College, 1902; member of the Medical Association of Georgia; entered the U. S. Navy on July 22, 1905 and retired March 13, 1924; at one time director of the John D. Archbold Memorial Hospital, Thomasville, Ga.; died in the U. S. Naval Hospital January 27, aged 68, of carcinoma.

Howard D. Brothers, Agra, Kan.; Omaha Medical College, 1883; died recently, aged 83.

Elbridge L. Busby, Henderson, Ky.; Kentucky School of Medicine, Louisville, 1903; member of the Kentucky State Medical Association; at one time superintendent of the Central State Hospital, Lakeland, and the Western State Hospital, Hopkinsville; died in the Protestant Deaconess Hospital, Evansville, Ind., January 24, aged 65.

Alfred Cahn, Mannsville, N. Y.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1903; died January 17, aged 64.

James Phaon Caldwell, St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; member of the Minnesota State Medical Association; on the staffs of St. Luke's Hospital, St. John's Hospital and the Midway Hospital, where he died January 20, aged 60, of lymphosarcoma.

Frank A. Cavanaugh, South Haven, Kan.; Eclectic Medical Institute, Cincinnati, 1894; member of the Kansas Medical Society; died in Toledo, Ohio, January 18, aged 83, of myocarditis.

Herbert Augustus Chase, Cambridge, Mass.; Boston University School of Medicine, 1876; at one time a vice president of the Wilsey Savings Bank of Boston; died January 27, aged 93, of myocarditis and bronchopneumonia.

Franklin Higby Church ✱ Salem, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1906; for many years county physician; on the staff of the Salem County Memorial Hospital; chief clinician, Salem County Social Disease Clinic; at one time physician to an expedition to South America for the University of Pennsylvania; died January 24, aged 63, of diabetes mellitus.

Frederick S. Clapp, Middlefield, Ohio; Western Reserve University Medical Department, Cleveland, 1884; died in St. Luke's Hospital, Cleveland, January 1, aged 80, of uremia.

Constant Moreaux Colignon ✱ Muskegon, Mich.; Rush Medical College, Chicago, 1914; fellow of the American College of Surgeons; past president of the Muskegon County Medical Society; served overseas as a captain in the medical corps of the U. S. Army during World War I; on the surgical staff and vice chief of staff for many years, Mercy Hospital; on the surgical staff of the Hackley Hospital; organized and directed the medical department of Campbell, Wyant and Cannon Foundry Company; died January 21, aged 53.

Charles A. Crane, Corunna, Mich.; Detroit College of Medicine, 1891; member of the Michigan State Medical Society; past president of the Shiawassee County Medical Society; formerly coroner of Shiawassee County and chairman of the Shiawassee County Democratic Committee; served as county jail physician; on the staff of the Memorial Hospital, Owosso; died suddenly January 24, aged 78, of angina pectoris.

Alexandre d'Artun, Lawrence, Mass.; Université de Lausanne Faculté de Médecine, Switzerland, 1919; died in the Deaconess Hospital, Boston, January 25, aged 50, of bronchopneumonia, pulmonary metastatic sarcoma and osteochondrosarcoma of the right ileum.

John Joseph Egan, Gloucester, Mass.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medical Society; died January 22, aged 73.

Clara S. Eirley, St. Petersburg, Fla.; Woman's Medical College of Baltimore, 1892; member of the Indiana State Medical Association and the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; served on the staff of the Logansport State Hospital, Logansport, Ind.; died January 30, aged 76, of myocardial degeneration.

Joseph Wilbur Ehmer, Crivitz, Wis.; Northwestern University Medical School, Chicago, 1900; died in Pembine recently, aged 77, of hypostatic pneumonia, cardiac failure and myocarditis.

Laszlo Joseph Endrey ✱ Cleveland; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1913; on the staff of the Lutheran Hospital; found dead January 28, aged 55, of a self-inflicted bullet wound.

Edward Purdon Evans ✱ Milwaukee; Rush Medical College, Chicago, 1894; formerly professor of pediatrics at the Marquette University School of Medicine; for eighteen years medical examiner of the Equitable Life Assurance Society of the United States; served overseas during World War I; on the staff of the Misericordia Hospital; died January 31, aged 70, of coronary thrombosis and angina pectoris.

Arthur Ezra Falkenbury ✱ Whitehall, N. Y.; Albany (N. Y.) Medical College, 1896; past president of the Washington County Medical Society; on the staff of the Glens Falls Hospital, Glens Falls; formerly a member of the school board; died January 23, aged 78, of lobar pneumonia.

Joshua Harlan Fell, Canyon City, Ore.; Rush Medical College, Chicago, 1888; died January 16, aged 80, of arteriosclerosis.

Herbert Loring Frost, East Cleveland, Ohio; Homeopathic Hospital College, Cleveland, 1886; fellow of the American College of Surgeons; past president of the staff and

member of the visiting staff, Huron Road Hospital, where he died February 10, aged 83, of pneumonia and arteriosclerotic heart disease.

Jesse Franklin Goff, Lexington, Tenn.; Vanderbilt University School of Medicine, Nashville, 1916; member of the Tennessee State Medical Association; died January 11, aged 59.

Norborne Taliaferro Greer, Rockymount, Va.; University of Maryland School of Medicine, Baltimore, 1892; died January 25, aged 76.

Rufus Lynn Grier, Lumpkin, Ga.; Atlanta Medical College, 1893; died December 11, aged 74.

Max Gutman @ New York; University and Bellevue Hospital Medical College, New York, 1908; died in the Jewish Memorial Hospital January 29, aged 62, of heart disease.

George Herbert Hanson, Los Angeles; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; formerly mayor of Paisley, Ore.; died January 17, aged 66, of post-operative shock due to carcinoma of the bladder.

Roy Nolan Hare @ Jasper, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1925; past president of the Walker County Medical Society; member of the board of directors of the First National Bank of Jasper; chief of staff, Peoples Hospital; died in the Jefferson Hospital, Birmingham, January 25, aged 49, of heart disease.

Charles Meigs Harrison, Napoleon, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the Ohio State Medical Association; on the staff of the S. M. Heller Memorial Hospital; died January 31, aged 76, of angina pectoris.

Grant Summer Hicks, Tacoma, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; member of the Washington State Medical Association; died January 19, aged 78, of cerebral hemorrhage.

Walter Howard Hill, San Francisco; John A. Creighton Medical College, Omaha, 1913; on the staff of St. Luke's Hospital; died January 28, aged 55.

Blanca H. Hillman, Drexel Hill, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1905; at one time on the staff of the Woman's Hospital, Philadelphia; died in Nokomis, Fla., January 30, aged 67, of carcinoma of the pancreas and gallbladder, mitral stenosis and left ventricular failure.

Charles J. Hoban @ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; on the staff of St. Agnes Hospital; died in the Doctor's Hospital January 30, aged 83, of pneumonia.

William Joseph Holton @ Plant City, Fla.; University of Georgia Medical Department, Augusta, 1911; served in the U. S. Army for three years in the Philippines just after the insurrection; died in the Veterans Administration Facility, Bay Pines, January 7, aged 60.

Edward Max Knecht @ Washington, D. C.; Harvard Medical School, Boston, 1937; diplomate of the National Board of Medical Examiners; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Sept. 26, 1940, later stationed at the Walter Reed General Hospital; dishonorably discharged on Nov. 8, 1941; died February 4, aged 34, of acute congestive heart disease.

James E. McConnell, Somerset, Colo.; Rush Medical College, Chicago, 1896; died in Delta recently, aged 74, of carcinoma of the prostate.

Charles H. Merrill, Detroit; University of Wooster Medical Department, Cleveland, 1905; a captain in the medical corps of the U. S. Army during World War I; served as a member of the tuberculosis division of the city board of health and the research division of Parke Davis & Company; died February 26, aged 64, of coronary thrombosis.

Melvin G. Paden, White Oaks, N. M.; Louisville (Ky.) Medical College, 1886; formerly health officer and druggist; died recently, aged 82, of pneumonia.

Lucy C. Waite Robinson, Denver; the Hahnemann Medical College and Hospital, Chicago, 1883; Harvey Medical College, Chicago, 1895; at one time on the staff of the Mary Thompson Hospital of Chicago for Women and Children; served as a delegate to the International Congress of Surgeons in Lisbon and Moscow; died recently, aged 83, of chronic myocarditis, concussion of brain and shock due to a fall.

O. Lee Schattensburg @ Honolulu, Hawaii; University of California Medical School, San Francisco, 1925; served as recording secretary and president of the Honolulu County Medical Society; consultant, maternal and infant welfare bureau of the board of health; on the staffs of Queen's, St. Francis and Kapiolani hospitals; died July 10, 1943, aged 48, of toxic myocarditis secondary to infected psoriasis.

Clayton Myron Spencer, Scottville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; member of the Michigan State Medical Society; a lieutenant during World War I; formerly mayor of Scottville; served as a member of the board of education; member and past president of the Rotary Club; a director of the Scottville Savings Bank; died in the Paulina Stearns Hospital, Ludington, January 31, aged 65, of coronary thrombosis.

John Peter Toomey, Boston; Harvard Medical School, Boston, 1893; died recently, aged 73.

Henry Mitchell Waldren, Drayton, N. D.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898; member and past president of the North Dakota State Medical Association; formerly member and past president of the North Dakota State Board of Medical Examiners; fellow of the American College of Surgeons; medical director and owner of the Drayton Hospital; died in the University Hospital, Minneapolis, February 22, aged 68, of Hodgkin's disease.

Joseph Lonzo Wicks @ Evanston, Wyo.; Ohio Medical University, Columbus, 1898; past president of the Wyoming State Medical Society and of the Uinta County Medical Society; member of the House of Delegates of the American Medical Association session in 1905; county health officer; served as physician for the Bear River Coal Company and as member of the city council; a member of the Wyoming legislature in 1933 and 1935; since 1918 president of the Stockgrowers Bank of Evanston; died January 31, aged 73, of hypertensive heart disease.

Timothy Graham Williams, Rosehill, N. C.; George Washington University School of Medicine, Washington, D. C., 1911; served during World War I; died December 27, aged 56.

DIED WHILE IN MILITARY SERVICE

Edward Murray Fitzgerald, Pittsburgh; Georgetown University School of Medicine, Washington, D. C., 1936; member of the Medical Society of the State of Pennsylvania; commissioned a first lieutenant in the medical reserve corps of the U. S. Army June 7, 1936 and later promoted to captain; died at De Ridder, La., February 11, aged 34.

Albert Whitfield Hawkes, Cutchogue, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1935; member of the Medical Society of the State of New York; commissioned a major in the medical corps, Army of the United States, on Feb. 27, 1942 and attached to the 9th General Hospital, Fort Andrews, Mass.; died in the South Pacific area Dec. 17, 1943, aged 37, of typhus.

Raymond Barnard Miles @ Brooklyn; Yale University School of Medicine, New Haven, Conn., 1924; fellow of the American College of Surgeons; served as instructor in the department of surgery at the Long Island College of Medicine; at one time assistant to the chief medical examiner of New York; formerly an associate staff surgeon at the Brooklyn Hospital; served during World War I; began extended active duty Nov. 3, 1942 as a major in the medical reserve corps, U. S. Army, attached to the 79th General Hospital, Camp White, Medford, Ore.; died in Ireland February 2, aged 45, of accidental asphyxiation.

Harry Dudley Miller @ Shelbyville, Ind.; University of Illinois College of Medicine, Chicago, 1934; commissioned as a first lieutenant on May 5, 1942 in the medical corps, Army of the United States; assigned to the 40th Station Hospital, Camp Barkeley, Texas; later promoted to captain; died in the North African theater February 2, aged 35, of injuries received when a boiler exploded.

James Douglas Noonan, Seattle; McGill University Faculty of Medicine, Montreal, Que., 1943; served as an intern at the Providence Hospital; commissioned a first lieutenant in the medical corps, Army of the United States, Oct. 23, 1943; died in Camp Barkeley, Texas, February 9, aged 25, of meningitis.

Clifford August Schmiesing, Salamanca, N. Y.; St. Louis University School of Medicine, 1929; member of the Medical Society of the State of New York; for many years school physician; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on July 21, 1938 and began extended active duty in April 1941; later promoted to captain; died in Algeria January 21, aged 38, of a skull fracture received in an accident.

Bureau of Investigation

DAINGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in the pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods of duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form; (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Greenawalt's Compound Dandelion Liver Disks.—William G. Greenawalt, Norwalk, N. Y. Shipped March 26, 1941. Composition: essentially laxative plant drugs, such as podophyllum and aloes, with small amounts of belladonna and nux vomica alkaloids. Misbranded because label failed to give adequate directions for use or sufficient warning against giving to children or using in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods of duration of administration, particularly in that it failed to warn that a laxative should not be taken when nausea, vomiting, abdominal pain or other symptoms of appendicitis are present, or that frequent use of product might result in dependence on laxatives, or that use of a medicine containing strychnine, as this did, might be especially dangerous to children and elderly persons.—[D. D. N. J., F. D. C. 706; April 1943.]

Kalis Capsules.—Kalis Products, Ottumwa, Iowa. Shipped Nov. 6 and Dec. 5, 1941. Composition: essentially acetanilid and laxative plant drugs, including podophyllum and cascara sagrada. Misbranded because labeling failed to give adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, since labels did not caution against administering this product when symptoms of appendicitis are present, or to warn against unsafe methods or duration of administration, whereas frequent or continued use of product might be dangerous in causing serious blood diseases, anemia, collapse or dependence on the drug.—[D. D. N. J., F. D. C. 707; April 1943.]

Laneton for Women.—National Medicine Company, Nashville, Tenn. Shipped Jan. 10, 1942. Composition not stated. Misbranded because label did not give adequate directions for use as a laxative, which product was alleged to be, and further failed to bear adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe duration of administration. Further misbranded because label was misleading in that it represented and suggested that the product was especially adaptable for use by women, whereas its effect would be the same on both men and women.—[D. D. N. J., F. D. C. 708; April 1943.]

Nurito.—Nurito Company, Chicago. Shipped Sept. 27, 1941, and Jan. 23, 1942. Composition: Each powder contained $\frac{1}{8}$ Gm. of phenolphthalein. Misbranded because label did not give adequate directions for use or sufficient warnings against administering in those pathologic conditions wherein it might be dangerous to health, or sufficient caution against unsafe duration of administration, since it did not adequately warn the user that the product should not be taken when certain stated symptoms of appendicitis are present, or that frequent or continued use might result in dependence on laxatives.—[D. D. N. J., F. D. C. 710; April 1943.]

Pon-Tam-Pon and Glycerant.—Pond Manufacturing Company, Rutland, Vt. Shipped Jan. 2, 1942. Composition: tampons and a tube labeled "Glycerant." Examination of "Medication A" tampon showed that it was essentially a gelatin shell containing a jelly composed of glycerinated gelatin, boric acid, ichthammol, iodine and a bundle of wool fibers. "Medication C" tampon was found to have the same composition except that it also contained silver nitrate, but no ichthammol. The Glycerant was found to be essentially boric acid in a jelly base. Articles misbranded because labels failed to give adequate warnings against use in those pathologic conditions wherein they might be dangerous to health, since labeling did not warn that they should not be used in case of gonorrhea. Further misbranded because of false and misleading label statements: "A tampon should be worn continuously and changed every 24 hours to obtain best results. . . but if profuse discharge is present, tampon should be changed every 12 hours until discharge is relieved. . .", which statements represented that the articles constituted effective treatments for discharge from the vagina and prolapse and backward displacement of the uterus.—[D. D. N. J., F. D. C. 711; April 1943.]

Shapley's Medicine for Acid or Sour Stomach.—Shapley Drug Company, Decatur, Ill. Shipped March 17, 1942. Composition: essentially extracts of plant drugs including rhubarb, with alcohol, sugar, potassium carbonate and water. Misbranded because labeling failed to give adequate directions for use, in that it provided for continuous administration of a laxative, which type of product should be taken for only occasional need. Further misbranded because label failed to warn adequately against use in those pathologic conditions wherein it might be dangerous to health, since labels failed to warn that the product should not be taken when abdominal pains, nausea, vomiting or other symptoms of appendicitis were present, or to caution against unsafe methods or duration of administration.—[D. D. N. J., F. D. C. 712; April 1943.]

Special Formula Tablets S. C. Purple.—Purity Drug Company, Passaic, N. J. Shipped Oct. 20, 1941. Composition: yohimbé bark, a strychnine compound, a magnesium compound, zinc phosphide, and extracts of plant drugs, such as damiana. Misbranded because labeling instruction, "Dose: To be taken as directed by physician," did not constitute adequate directions for use. Further misbranded because label failed to give adequate warning against administration to children, which use might be dangerous to health, or caution against unsafe dosage or duration of administration, since no caution was urged against frequent or long continued use, which might result in strychnine poisoning.—[D. D. N. J., F. D. C. 713; April 1943.]

Spicer's Compound.—Charles R. Spicer Company, Memphis, Tenn. Shipped Oct. 22, 1941, and Jan. 21, 1942. Composition: essentially a solution of epsom salt (about 25 per cent), with relatively small proportions of extracts of plant drugs, including laxatives, and a small amount of an iron salt, sweetened with saccharin and preserved with sodium benzoate. Misbranded because labeling failed to give adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, since the label statement, "Caution—In case of severe abdominal pain, do not take a laxative," did not adequately warn purchasers against using this product when additional symptoms of appendicitis were present, or caution that frequent use of the product might cause a laxative habit; further misbranded because represented as a relief for various conditions which are due to causes other than occasional constipation; also misbranded because of label misstatements as to composition or as to proper terms of drugs present.—[D. D. N. J., F. D. C. 714; April 1943.]

Welltone.—Standard Chemical, Inc., Brooklyn, N. Y. Shipped Jan. 10, 1942. Composition: a solution of epsom salt (28 per cent), with inconsequential amounts of other salts, flavored with cassia and clove oils and sweetened with saccharin. Misbranded because label directions for use were inadequate and might result in dependence on laxatives. Further misbranded because the "lone" part of name represented that product would increase appetite, and statements in accompanying circular represented that mixture would increase appetite, prevent or cure headaches or run-down feeling, establish regularity in elimination, correct sluggish digestion or sour stomach, prevent weakening feeling due to constipation, eliminate any danger to general health, assist in digestive processes, and produce some other beneficial effects. Also misbranded because of label claim that the product complied with the federal Food, Drug and Cosmetic Act.—[D. D. N. J., F. D. C. 716; April 1943.]

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Gold Medal Compound Pills and Savatan.—S. Pfeiffer Manufacturing Company, St. Louis. Shipped Feb. 16, 1942. Composition: the pills consisted essentially of iron sulfate and small amounts of volatile oils, including spearmint. Savatan consisted of capsules each containing about 5 minims of apiol. Both products misbranded because of misleading label representations that they would relieve minor discomforts in menstruation.—[D. D. N. J., F. D. C. 736; April 1943.]

Green's Reliable Restorer.—A. J. Green, Clarksburg, W. Va. Shipped Feb. 16, 1942. Composition: essentially lead acetate and sulfate, zinc acetate, sulfur, alcohol, glycerin, oil of bay and water. Misbranded because of false and misleading representations on label that product would restore gray or faded hair to its natural color, free the scalp from dandruff and all contagious eruptions, stop hair from falling and promote and restore its growth.—[D. D. N. J., F. D. C. 737; April 1943.]

Herb Doctor Compound.—Strong, Cobb and Company, Cleveland. Shipped Sept. 25, 1941. Composition not stated. Misbranded because labeling failed to bear adequate directions for taking, since those given provided for its use under conditions which might have rendered it injurious to the user by creating a dependence on laxatives to move the bowels.—[D. D. N. J., F. D. C. 666; February 1943.]

Kotanko.—Block Drug Company, Jersey City, N. J. Shipped Dec. 22, 1941, and May 11 and June 2, 1942. Composition: essentially sulfur, pilocarpine, resorcinol and a camphoraceous oil, in an ointment base. Misbranded because label falsely represented that the product would discourage excessive loss of, and strengthen existing growth of, hair and help promote new growth, and that it was an efficacious treatment for dandruff, thin, brittle or falling hair and baldness. Further misbranded because made from two or more ingredients, whereas label did not give the common or usual name of each.—[D. D. N. J., F. D. C. 710; April 1943.]

Na-Stim.—Na-Stim Laboratories, Inc., Modesto, Calif. Shipped Nov. 24, 1941. Composition: essentially water, a gum, and fatty material. Misbranded because label claimed also the presence of menthol, Venice turpentine, oil of pine and iodine, whereas the government chemists' analysis did not detect the presence of the first three of these, and found merely a trace of combined iodine. Further misbranded because label falsely represented that product constituted relief from, and adequate treatment for, hay fever, sinusitis, head colds and other nasal disorders.—[D. D. N. J., F. D. C. 739; April 1943.]

O'Dara.—O'Dara Products Company, St. Louis. Shipped April 28, 1941. Composition (by percentages): alcohol, 46; glycerin, 17; methyl salicylate, 7; potassium iodide, 5; zinc chloride, 3, and phenol, 1, with unreported amounts of water, saccharin and myrrh. Misbranded because label falsely represented that it was an adequate treatment for pyorrhea, trench mouth, canker sores, stomatitis or spongy gums, that it would coagulate, detach and clear away objectionable matter, leave the tissues clean and stimulate healing processes; that it would kill disease producing organisms in the tissues, act as an adequate treatment for sore throat, form a protective film over wounds by coagulating the blood, and accomplish some other things.—[D. D. N. J., F. D. C. 738; April 1943.]

Omega Oil.—Block Drug Company, Jersey City, N. J. Shipped Dec. 22, 1941, and May 11 and June 2, 1942. Composition: essentially chloroform, methyl salicylate, mineral oil and a small amount of alkaloidal material such as hyoscyamus. Misbranded because label falsely represented that the product was different from ordinary liniments and was "far more than just liniment"; that it was a powerful and reliable answer to dozens of everyday ills; that at point of application it would soothe and ease the local nerves, stimulate the circulation, break up congestion, relieve rheumatic pains due to exposure, dampness and cold, alleviate athlete's foot and toe itch, and do some other things.—[D. D. N. J., F. D. C. 740; April 1943.]

Optic Drop.—Romero Drug Company, El Paso, Texas. Shipped Oct. 4, 1940. Composition: a watery solution of zinc sulfate, chlorobutanol, a berberine salt and boric acid or other borate. Misbranded because label falsely represented it to be beneficial for irritated eyes and failed to give the common or usual name of each active ingredient or a declaration of the quantity of the contents.—[D. D. N. J., F. D. C. 741; April 1943.]

Papaya Syrup.—Tropical Fruit Products, St. Louis. Shipped Feb. 25, 1941. Composition: an opaque, yellow, syrupy liquid containing essentially sugars, fruit acids, and orange and lemon oils, with papaya flavor. No active papain or other proteolytic enzymes found. Misbranded because label falsely represented that product would supply energy food which could be easily absorbed; that it would promote health and build energy, redress absorption of poisonous toxins in stomach distress, be an alkaliizer and body builder, prevent kidney, liver and stomach diseases and keep the skin clear; that it was an appropriate treatment for anemia, gastritis, indigestion, constipation, arthritis, rheumatism, ulcers, colitis, sinusitis, influenza, colds, dysentery and obesity, and would increase the stature of children.—[D. D. N. J., F. D. C. 636; February 1943.] Also misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 3617.

Utona.—National Utona Company, Detroit. Shipped Oct. 18 and Dec. 2, 1941, and Jan. 12, 1942. Composition: essentially an extract of a saponin-bearing plant such as yucca, preserved with salicylic acid and sodium benzoate, colored with caramel and flavored. Misbranded because of false and misleading label representations that it would be efficacious as a relief for high blood pressure; would control the pressure and relieve the distressing symptoms; would lower high blood pressure of patients even in advanced years and render the body less toxic; would lessen the urge for frequent urination at night, impart a profound sense of well-being, and usually bring about improvement in symptoms such as pains in the back and neck, dizziness, headaches and tingling sensation; would help one sleep better and feel better and bring about a better relationship between the systolic and diastolic pressure.—[D. D. N. J., F. D. C. 742; April 1943.]

Vla-Min.—Universal Products Company, Cleveland. Shipped March 7 and 10, 1942. Composition: a liquid containing ferric sulfate (about 1,196 grains per gallon) and smaller amounts of the sulfates of aluminum, calcium and magnesium, with sodium phosphate. Misbranded because label carried false declaration of composition, and further represented in a lengthy list of ailments that product was virtually a cure-all. Among the disorders mentioned were such serious conditions as Bright's disease, diabetes, gallstones, cataract, anemia, arthritis, asthma, goiter and tuberculosis.—[D. D. N. J., F. D. C. 743; April 1943.]

Correspondence

MARIHUANA INTOXICATION

To the Editor:—As a result of the suppression, due to the war, of postal relations between the United States and Tunisia, I have only just learned of the work of Drs. Samuel Allentuck and K. M. Bowman entitled "The Psychiatric Aspects of Marihuana Intoxication" (*Am. J. Psychiat.* 99:248 [Sept.] 1942). I take the liberty of bringing to your attention the observations suggested to me by this communication:

(a) The authors say that their experiments were made by administering the drug orally: now in the countries where toxicomania through hemp is rife it is chiefly by smoking it that addicts consume the drug. The authors recognize, moreover, that a drug takes effect more rapidly (I may add, with greater intensity) when it is ingested.

(b) The symptoms of cannabis intoxication reported by the authors are well known and have been described many times in almost the same terms by those authors who have discussed the question (see the work of R. P. Walton "Marihuana" and the document of the League of Nations: O. C. Cannabis 3). A happy addition, Allentuck and Bowman have been able to give a few results of ophthalmoscopic examinations, data concerning blood pressure and the results of the application of various tests.

(c) Allentuck and Bowman declare that their clinical and laboratory studies, made on subjects accustomed and unaccustomed to marihuana, reveal no significant somatic or mental change. It is regrettable that it was not possible for them to examine a few of those inveterate hemp smokers that one meets in India, the Near East and North Africa, cachectic, stupefied, besotted, incapable of any sustained work: their opinion would certainly not be the one which they maintain.

(d) The symptoms which Allentuck and Bowman describe correspond very exactly to what one might call acute temporary intoxication by cannabis and not to chronic intoxication.

I have pointed out, in my reports to the League of Nations, that many hemp smokers in North Africa confine themselves reasonably to relatively slight doses and frequency of absorption: they smoke, daily, 6 or 8 pipes of hemp, as we smoke 10 to 20 tobacco cigarettes. If they confine themselves to this, there is no danger. As for those who, less wise, have not the will to resist the attraction of the narcotic, they are headed for chronic intoxication, which leads them little by little to the most complete physical and moral decay.

To tell the truth, these unfortunates only rarely reach dementia. They are not encountered in the insane asylums: it is in the class of thieves (la "pègre"), made up of professional beggars, prowlers and robbers, that they fall. It would be superfluous to amplify this subject: it is set forth at length in Document O. C. Cannabis 3 of the League of Nations (pp. 51 to 66). Nevertheless it must be noted that the most serious accidents are observed in individuals consuming hashish (charas, chira); that is to say, the crude resin, and not in smokers of the plant itself, in its natural state. In fact, whereas the plant is shown to contain on an average from 5 to 8 Gm. of crude resin per hundred grams, hashish contains from 35 to 47 per cent of it. Until recently hashish (charas) was unknown in America: now, the last report of the United States government (1942) on the traffic in opium and other dangerous drugs mentions (p. 30) two seizures of charas. The notice is serious and big with disturbing consequences. In fact, if it becomes possible for them to consume charas, marihuana addicts will quickly suffer from accidents much more severe than those confirmed by Allentuck and Bowman.

The 77 subjects who underwent the experiments of Drs. Allentuck and Bowman (and this takes away a great deal of their value from the conclusions of these authors) were hos-

pital patients, even, it appears, prisoners. They were therefore obliged to be content with the quantities of drug administered to them. At liberty, some of them would have given free rein to their inclination and would not have stopped at the weak dose producing "the pleasure principle." It is because they can procure the drug at will, because they can consume as much of it as they wish and as often as they desire it, in the Oriental countries (where traffic in the drug is not prohibited or regulated), that there is such a large number of serious chronic cases of intoxication, the addicts being incapable of working, wretched ragamuffins who are a danger and a burden to society. These consequences alone would justify the prohibition of and a declaration of war on marihuana.

(c) There is not, say Allentuck and Bowman, any special characteristic psychosis due to marihuana. That may still be true, at present, in the United States, for a population in which the old hemp addict does not yet exist. That is why the remark of Dr. Lawrence Kolb (in the course of the discussion of the communication of Allentuck and Bowman) must be kept in mind: "the experiments ought to be made in a country like Mexico, where the use of marihuana is widespread."

The serious chronic hemp addict will perhaps never be produced in the United States, thanks, first, to the wise measures of prohibition and supervision taken and also because (if account is taken of what is found to be true in the Orient and in North Africa) it cannot be denied that serious chronic hemp intoxication makes hardly any victims except among the native population. The European, if, out of curiosity, he occasionally consumes hemp, does not make a practice of this intoxication: the form of drunkenness produced by it does not suit his temperament, his mentality. On the other hand, the poison appears perfectly adapted to the mentality of the Orientals, who have used it for almost eight centuries; but it is incontestable that it establishes in them a characteristic psychosis, which never escapes the doctor accustomed to seeing this sort of patients.

(f) Allentuck and Bowman say that cannabis intoxication is extremely variable in its manifestations. It is just there that one of its greatest dangers exists, for one does not know, and cannot foresee, how it will show itself. Certain addicts are driven, under the influence of hemp, to irresistible and dangerous impulses, whereas in others one finds only mental instability and reactions without danger for others. The attack varies, in short, with the culture, the sensitiveness and the intelligence of the subject: an apathetic person will have a calm and mild delirium; an imaginative one will have brilliant and varied hallucinations; a brute will have savage reactions, accesses of mad rage: Dr. Blondel once wrote "Every hashish addict has the dream which he deserves." That is, moreover, why psychoanalysts have proposed the use of cannabis to reveal the subconscious. This is quite all right when it is a question of supervised clinical experiments, but in everyday life is it not to be feared that in many cases tendencies and propensities will emerge from the subconscious of a goodly number of individuals which it would have been much better to leave buried forever?

(g) It has likewise long been noted that hemp was not an aphrodisiac; like certain other sensorial drugs, it produces, in certain consumers, sexual excitations psychic in character but without any physical effect. It is, moreover, notorious that hashish addicts no longer experience any sexual desire: women no longer interest them; they frequently fall, for a time, into sexual perversion, then, sobered, they are content to live "with their pipe and their pot."

(h) Allentuck and Bowman maintain that the relations between marihuana and crime are unfounded. This opinion, based on 77 tests applied to persons not living at liberty, appears bold. This has not escaped Dr. Lawrence Kolb, who expresses his reservations: "One may say of such a drug that, if it were abused as alcohol is abused, it might be an important cause of crimes and other misdemeanors."

Now, the statistics of the Narcotics Bureau in Washington are already eloquent on this subject; the annual reports of the Egyptian government to the League of Nations are no less so, as well as the various documents published in the course of the inquiries of the League of Nations.

"Hachichins" [hashish addicts] do not all become assassins (a reference to the medieval legend of the Old Man of the Mountain and his band of Assassins; the word "assassin" is derived from "hashish"). But their laziness, their amorality, indubitably lead them to commit criminal acts if only in order to procure the money necessary for the regular purchase of the drug. This road leads far and sometimes ends in crime.

(j) It is correct—and well known—that accidents from privation have not, with cannabis, the seriousness which they attain for users of manufactured drugs, even opium. Nevertheless, quite serious disorders are observed in those addicted to the drug over a long period when their poison is removed. Attacks of physical prostration and intellectual apathy, especially, are noted: the patient remains in a corner, prostrated, refusing to move, neglecting to eat.

(k) The use of marihuana to combat disorders due to the abuse of narcotics and to chronic alcoholism appears paradoxical. With individuals able to avail themselves freely, outside of all medical control, of a substitute drug analogous to the one of which one desires to have him [sic] break the habit, one will succeed only in replacing one intoxication by another.

I am willing to admit that certain persons afflicted with toxicomania who took a cure for intoxication by means of marihuana under the supervision of Drs. Allentuck and Bowman found accidents from privation improved by this substitution, that they were in better form as regards morale and bodily energy and were desirous of resuming their occupations more quickly. But I still maintain that at least 95 per cent of the persons suffering from toxicomania who have been forced to undergo a cure for intoxication have only one desire, on leaving the clinic; to wit, to procure their favorite drug quickly and to become addicted to it once more. There is therefore no reason to accustom them, in the course of treatment, to a substitute drug: that would be furnishing them two means of satisfying their vice, when they are no longer under the supervision of the hospital personnel.

I therefore share to the full the opinion of Dr. Lawrence Kolb: "By proposing the use of marihuana in the treatment of toxicomanias and chronic alcoholism, Drs. Allentuck and Bowman are entering dangerous territory and the result can be only the substitution of one toxicomania for another."

In conclusion, however interesting the results of the researches of Drs. Allentuck and Bowman may be, from certain points of view, it is my opinion that they have been made known to the public prematurely. In exclusively medical circles, such communications present no danger; on the contrary, they provoke discussions and new investigations which may throw light on the disputed points. But it is to be feared that the general public will retain especially what is not irrefutably proved by the work of Drs. Allentuck and Bowman; to wit, that marihuana is not as dangerous as it is said to be, that it induces pleasant sensations without the risk of baleful consequences and that it may constitute a valuable method of treatment in certain afflictions.

The use of marihuana must be prohibited on the same grounds as that of opium and the manufactured narcotics, and the social interest of the civilized countries demands that the strictest prohibition measures be taken and enforced.

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Expert on the Narcotics Commission
of the League of Nations.

Medical Examinations and Licensure**COMING EXAMINATIONS AND MEETINGS****NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, March 25, page 947.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, September 5. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARIZONA: Phoenix, April 4-5. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * Eclectic. Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: San Francisco, June 27-29. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

COLORADO: * Denver, April 4-7. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

DELAWARE: Dover, Oct. 10-12. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, April 4-6. Supt. of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KENTUCKY: Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville.

MARYLAND: Medical. Baltimore, June 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Homoeopathic. Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: * Minneapolis, April 18-20. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, May 1. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, September. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Endorsement. Columbus, April 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * Endorsement. Portland, April 22. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

RHODE ISLAND: * Providence, April 6-7. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandens St., Columbia.

WEST VIRGINIA: Charleston, May 1-3. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston.

WISCONSIN: * Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: Cheyenne, June 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhlman, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grete, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, April 4-5. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, May 2-3. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

RHODE ISLAND: Providence, May 17. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

**Bureau of Legal Medicine
and Legislation****MEDICOLEGAL ABSTRACTS**

Malpractice: Alleged Excessive X-Ray Dosage in Treatment of Barber's Itch.—Simon developed so-called "barber's itch" on his face in February 1941. His face became swollen, many pustules were exuding pus, the skin became cracked and bleeding, and there were some scabs. About May 17 he went to a clinic conducted by the Chicago Medical School, where he was examined and referred for treatment to the defendant, Kaplan, an associate professor of radiology at that school, who, so he testified, for over twenty years had limited his practice to roentgenology. May 29 the patient was subjected to x-ray therapy, the exact nature and extent of which is in dispute. The physician stated that each side of the patient's face was exposed to an x-ray machine for three and one-half minutes and that each side of the face received 217 r units. On the other hand, the patient stated that each side of his face was exposed ten minutes and a card, a part of the physician's office record relating to the patient, read "three and a half minutes to each side of the face, 500 r." The physician stated, however, on cross examination, in the words of the court, "with some uncertainty and hesitation that the 500 r which appeared on the card was the number of units he intended to give plaintiff and that he had not given him more than 217 r's during the treatment, on each side of the face." In any event, the patient returned to the physician in about two weeks, at which time his face was red and the physician gave him some salve, instructing him to return in a week to ten days, when he would give him another x-ray treatment. The patient, however, never returned but instead, on June 19, consulted Dr. Caro, a dermatologist. Just what the trouble was the reported case does not make satisfactorily clear. Apparently, however, the hair on the patient's face fell out permanently, the skin atrophied "with discoloration," there was "thinning of the skin, with erosions," and there was an enlargement of the veins. Alleging that that condition was due to negligence on the part of the physician in applying the x-ray treatment, the patient instituted an action for malpractice.

At the trial Dr. Caro, the dermatologist consulted by the patient, testified that he diagnosed the patient's condition when he was consulted that day as "an acute dermatitis, produced, probably, by radiation. That is x-ray." He stated that he treated the patient a number of times later, that the patient's condition improved in September or October 1941, that at the time of the trial the patient "shows the effects that we usually see in chronic x-ray burn" and that in his opinion, if proper dosages of x-ray had been applied, the present condition of the patient would not have developed. Dr. Uhlmann, who specialized in "radiotherapy, x-ray, diagnostic and therapeutic," was also called as a witness at the trial by the patient and he testified "that he saw plaintiff a few days before the trial and observed in his face several signs of disease which he proceeded to mention; that the condition he found on the upper part of the face 'could not be due to barber's itch or the after effects of barber's itch.'" In answer to a hypothetical question he testified that the logical conclusion is that the patient received more x-ray to the upper part than he received in the lower part of his cheeks and that in his opinion the treatment mentioned in the hypothetical question propounded to him "would not be usual and customary for a specialist to apply enough x-ray to bring about a condition of atrophy of the skin, thinning of the skin, with erosions." The defendant physician himself testified that the treatment he gave the patient was "the same kind of treatment ordinarily and customarily given by me to patients suffering from the barber's itch. In fact, he received a less number of r units than I have given to quite a number of others." As noted before, Kaplan testified that he gave the patient 217 r units on each side of the face, making a total of 434 r units, but his record card of the case bore a notation of 500 r, which he stated on cross examination was what he intended ultimately to give to the patient. The defendant called as a witness Dr. James T. Case, "practicing specialty radiology," who, in answering a hypo-

thetical question, testified that a total dosage of 500 r units to be given in two different treatments was quite within the ordinary and usual proper practice and that if 500 r units were given to each cheek in one treatment, "That would be somewhere near the upper limit of the proper dosage, it wouldn't be far from it." The defendant also called as a witness Dr. I. S. Trostler, also a radiologist, who in answer to a hypothetical question said that if 217 units were given in the treatment of barber's itch he would consider that according to the usual practice of physicians of skill in using x-ray in Chicago and that if the patient was given 500 r units on each cheek in a treatment he would think this was the proper practice. There was a judgment for \$4,500 in favor of the patient and the physician appealed to the appellate court of Illinois, first district, first division.

Apparently, preliminary to an argument on the specific respects in which the defendant contended that the trial court had erred, the defendant argued that before a recovery can be had in a malpractice case it must be shown by affirmative evidence that the physician was unskilful and negligent, that his want of skill caused plaintiff's injury and, further, that the liability of a physician for injuries caused by the misuse of an x-ray machine rests on the same principle of law as on any other branch of medicine or surgery. Both of these propositions, said the appellate court, are correct statements of the law. Specifically, the defendant contended (1) that the trial court erred in permitting medical expert witnesses called by the patient to testify directly that the x-ray treatment caused the plaintiff's condition rather than that the treatment might or could have caused the condition and (2) that this action on the part of the trial court was contrary to the rule of law in force in Illinois. It might to some slight extent appear, answered the court, that the patient's expert witnesses testified directly that the x-ray treatment given caused the patient's condition, but on examination of their testimony we think it clear that they were but giving their opinion that the treatment might or could have caused the patient's condition and the jury was not misled.

It was next contended that the diagnosis of the patient's expert witnesses that the patient's condition was due to x-ray exposure is not supported by the facts. The court, however, was unable to say that the jury was not warranted in finding that the treatment given had been negligent. The patient called two physicians who gave testimony tending to show that the defendant had been negligent in treating the patient. On the other side, the physician and two other medical expert witnesses gave testimony to the contrary. In these circumstances we are not warranted in disturbing the verdict of the jury.

The physician next contended that the court erred in the giving of two instructions, Nos. 15 and 16. Instruction No. 15 told the jury that if under a preponderance of the evidence and instructions of the court the jury found the issues for the patient and that the patient had sustained damages by reason of physical pain and suffering undergone by him as a natural, direct and proximate result of the negligence of the defendant, as charged and alleged by the plaintiff, then there should be a finding for the patient. The physician contended that insofar as this instruction in effect told the jury that if they found from a preponderance of the evidence that the plaintiff suffered damages as a result of the defendant's negligence, it in effect assumed that the defendant was negligent. We think this objection, answered the court, is hypercritical and while it would have been better to have told the jury that if they found the patient suffered damages as a proximate result of the defendant's negligence, if any, yet it did not direct a verdict, and we think the jury were not misled because they were told in another instruction that if they believed from the evidence that the defendant used ordinary care and skill in his treatment and exercised his best judgment then it was their duty to find the defendant not guilty. Moreover, the instruction told the jury that they must find the patient was damaged as a result of the physician's negligence "as charged and alleged" by the plaintiff in his complaint. The complaint made to instruction No. 16 was that it instructed the jury that in fixing the plaintiff's damages it might take into consideration the plaintiff's marred personal appearance. But, said the court, in *Fitzgerald v. Davis*, 237 Ill. App. 488, we held that the plaintiff's marred personal appearance was a proper element for the jury to consider in fixing the damages. We there said:

The law only prohibited the recovery of damages in such a case for mental suffering which results from embarrassment or chagrin and which suffering has no relation to physical pain . . . She might recover for disfigurement which resulted from the accident

Of course, continued the court, every one knows that the disfigurement of one's face which is the result of a defendant's negligence often may cause damages, for example, plaintiff may be unable to secure employment on account of such disfigurement.

The judgment of the trial court in favor of the plaintiff was accordingly affirmed.—*Simon v. Kaplan*, 52 N. E. (2d) 832 (Ill., 1944).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. L. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for Thoracic Surgery, Chicago, May 5-6. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Figi, 102 Second Ave., S.W., Rochester, Minn., Secretary.
- American Association on Mental Deficiency, Philadelphia, May 11-13. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.
- American Psychiatric Association, Philadelphia, May 15-18. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
- American Psychoanalytic Association, Philadelphia, May 13-15. Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
- Arizona State Medical Association, Phoenix, April 14-15. Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
- Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 9. Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Connecticut State Medical Society, Bridgeport, May 2-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Florida Medical Association, St. Petersburg, April 13-14. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia Medical Association of, Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, April 20-21. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
- Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society, New Orleans, April 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.
- Minnesota State Medical Association, Rochester, April 13-15. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
- Mississippi State Medical Association, Jackson, May 9-10. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, April 23-25. Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis, Secretary.
- National Tuberculosis Association, Chicago, May 10-12. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 16. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25-27. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, Pinehurst, May 1. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Fargo, May 7-9. Dr. L. W. Larson, 221 5th Street, Bismarck, Secretary.
- Northern Tri-State Medical Association, Toledo, Ohio, April 11. Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
- Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24-26. Dr. L. I. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.
- Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- South Carolina Medical Association, Columbia, April 11-12. Dr. Julian P. Price, 105 W. Cheves St., Florence, Secretary.
- South Dakota State Medical Association, Huron, May 21-23. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.
- Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
- West Virginia Medical Association, Wheeling, May 15-16. Mr. Charles Lively, P. O. Box 1011, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

11:1-30 (Jan.) 1944

Review of Hypoglycemia, Its Physiology and Pathology, Symptomatology and Treatment. H. E. Himwich—p. 1.

*Salmonellosis Caused by the Ingestion of Ducks' Eggs I. Snapper—p. 8.

Treatment of Chronic Ulcerative Colitis C. J. Drueck—p. 10.

Influence of Diet on Sulfonamide Action Esther M. Greisheimer, Robert Hafkesbrung and Grace E. Wertenberger—p. 13.

Salmonellosis Caused by Ingestion of Ducks' Eggs.—

Snapper directs attention to the fact that outbreaks of paratyphoid fever C and allied types of salmonellosis may occur if raw or insufficiently cooked ducks' eggs are used in the preparation of ice cream, sauces, puddings, pies or mincemeat, foods that may be put away for hours before they are consumed. *Salmonella* organisms may multiply rapidly and infection of human beings may result if the foods are eaten. In the United States ducks' eggs are rarely used for human consumption, and salmonellosis of this source is therefore rare. In the Orient, particularly in China, ducks' eggs are widely used and this may be a factor in the frequent occurrence of salmonellosis in that country. In the Netherlands East Indies investigations have been carried out on ducks' eggs, and *Salmonella typhi* murium has been detected in 8 of a total of 300 ducks' eggs.

American Journal of Physiology, Baltimore

140:461-608 (Jan.) 1944. Partial Index

Effect of Repeated Determinations on Basal Metabolism of Children. R. C. Lewis, Anna Marie Duval and A. Iliff—p. 461.

Effect of Damage to Tracheal Mucosa on Drainage of Respiratory Tract Fluid E. M. Boyd, W. F. Perry and Mary E. T. Stevens—p. 467.

Carbohydrate Regulation Under Severe Anoxic Conditions. L. Van Middlesworth, R. F. Kline and S. W. Britton—p. 474.

Effect of Sulfonamides on Blood Oxygen and Carbon Dioxide Capacity, Arterial Saturation and Blood Pigments J. F. Hall Jr.—p. 483.

*Nervous Factor in Shock Induced by Muscle Trauma in Normal Dogs. W. J. Eversole, W. Kleinberg, R. R. Overman, J. W. Remington and W. W. Swingle—p. 490.

Changes in Renin-Angiotensin System in Hemorrhagic Shock D. A. Collins and Angie S. Hamilton, with technical assistance of Margaret Casey Collins and A. Sokolchuk—p. 499.

Further Study of Boron in Nutrition of Rat. J. D. Teresi, E. Hove, C. A. Elvehjem and E. B. Hart—p. 513.

Comparison of Renal Reabsorptive Processes for Several Amino Acids. R. F. Pitts—p. 535.

Relation Between Uric Acid Excretion and Hippuric Acid Synthesis in Man S. T. Michael, J. M. Looney and Embrie J. Borkovic—p. 548.

Testing of Color Vision in Relation to Vitamin A Administration. W. F. Hamilton, A. P. Briggs and R. E. Butler—p. 578.

Relation of Heart Rate to Slow Waves in Electroencephalogram During Overventilation. C. W. Darrow and J. H. Pathman—p. 583.

Effect of Crystalloidal and Protein Containing Solutions on Body Fluids and Circulating Plasma Proteins. C. T. Ashworth, Z. W. Hutcheson, W. T. Payne and A. W. Jester—p. 589.

Radioactive Phosphate as an Indicator of Relationship Between Phosphate Changes of Blood, Muscle and Liver, Following Administration of Insulin. N. O. Kaplan and D. M. Greenberg—p. 598.

Effect of Thiamine Deficiency and of Reduced Food Intake on Resistance to Low Oxygen Tension in Cat. D. C. Smith, R. H. Oster and J. E. P. Loman—p. 603.

Nervous Factor in Shock.—Eversole and his collaborators found that traumatization of the muscles of both hind legs by 800 to 1,600 blows with a light rayhite mallet, in which the skin was not ruptured or bones fractured, produced fatal shock in 14 of 15 dogs. The survival periods ranged from two to eight hours, with an average of four hours after the completion of the trauma. Spinal anesthesia maintained for three to four hours prevented all symptoms of shock and allowed uneventful recoveries in 10 of 12 animals. A local anesthesia of the legs by means of pressure (tight tourniquets) maintained for a two

hour period protected 7 of 12 dogs against shock and considerably prolonged the survival of 4 more. Thorough infiltration of the areas to be traumatized with a 4 per cent procaine solution, repeated frequently over a three to four hour period, prevented fatal shock in 7 of 10 dogs. The evidence indicates that a flow of nociceptive stimuli from the traumatized regions, unless prevented by spinal anesthesia or a local block, is an important contributing factor in the initiation of the shock state which follows the described type of muscle trauma.

American Journal of Surgery, New York

63:1-150 (Jan.) 1944

Invagination Operation for Esophageal Diverticulum D. E. Ross—p. 3

Recognition and Management of Brain Abscess. J. M. Meredith—p. 10

Complicated Traumatic Dislocations of Hip W. D. Griesmer—p. 16

Management of Varicose Veins in Army Personnel. A. S. White, J. J. Haberer and S. Gendel—p. 28.

Treatment of Burns: Symposium H. May—p. 34

Skin as Source of Systemic Infection I. W. Held and I. Busch—p. 47.

Reduction and After-Treatment of Posterior Dislocation of Elbow, with Special Attention to Brachialis Muscle and Myositis Ossificans L. K. Loomis—p. 56

Acute Perforated Duodenal Ulcer. V. G. Burden—p. 61.

Repair of Urinary Bladder Herniation. A. H. Iason—p. 69

Malignant Tumors of Stomach. F. De Amesti—p. 78

Submuscle Pelvic Tissue Spaces Anatomy and Clinical Considerations B. H. Brunkow—p. 86

Appendicitis: Review of 4,283 Cases. M. Behrend—p. 90

*Sulfonamides in Fresh and Contaminated Wounds. Mode of Application. E. Holman—p. 96

*Treatment of Skeletal Pain with Procaine Injections. Analysis of 295 Cases in General Practice. R. L. Gorrell—p. 102

Venography as Essential Aid in Treatment of Varicose Veins S. H. Sedwitz and E. C. Baker—p. 105.

*Rupture of Rectosigmoid by Compressed Air: Case Report. S. A. Swenson Jr., and H. N. Harkins—p. 141.

Sulfonamides in Fresh and Contaminated Wounds.—

Holman applied in the management of wounds a mixture of equal parts of sulfanilamide and sulfathiazole powder or crystals in generous amounts to every pocket and crevice of the wound at the earliest possible moment. The application of the drug should be repeated when débridement is performed. When operating in a dirty or potentially contaminated wound, as drying a débridement or in the closure of a colostomy, the drug mixture should be applied as the operation proceeds and as freshly incised areas are exposed in the operative field. In open resections of the intestinal canal, in lobectomy or pneumonectomy, the raw surfaces of incised tissues should be impregnated with the drugs before opening the viscus or the bronchus. In localized or general peritonitis the drug should be brought into contact with all contaminated surfaces. Mixed with blood and tissue fluids, the drug is thinly smeared or rubbed over all infected peritoneal surfaces, insuring maximum absorption and least interference with healing. Dumping large masses of the dry powder into a wound is inviting poor healing, as it may then act as a foreign body. "Frosting" a wound reaches only the superficial surfaces. After operation, when vomiting or gastric suction prevents their oral administration, the drugs may be administered subcutaneously, intravenously or rectally. Sulfanilamide may be administered by hypodermoclysis in 0.8 per cent watery solution. Five Gm. of sodium sulfathiazole dissolved in 100 cc of distilled water may be given intravenously twice daily. Sulfanilamide may be given intravenously every six hours as a 1 per cent solution. Four to 6 Gm. of sulfanilamide powder suspended in 100 cc. of tap water may be administered by rectum. Orally, 4 to 6 Gm. of the sulfonamides may be given as the initial dose, and 1 Gm. every four hours thereafter. Apparent cyanosis, a scarlatiniform rash or a high unexplained fever demand the discontinuance of the drug. A daily urinary output of at least 1,000 cc. is imperative, and 1,500 cc is preferable. Many cases, including compound injuries of the extremities, skull, thorax and abdomen, have been treated successfully according to these principles.

Treatment of Pain with Procaine Injections.—Gorrell injected procaine, nupercaine or eucupin to 295 patients to counteract pain. Sprained ankle, osteoarthritis or rheumatic conditions were the chief causes of pain. The relief of pain by local anesthetic injections does not free one from the responsibility of determining a possible serious cause for the pain. The so-called trigger point should be ascertained before the injection is made. If the patient does not wince when pressure

is made on a point, it is probably not the one sought. If finger tip pressure causes the patient to say "That is my pain," one may confidently predict relief. If several areas of tenderness are found, each should be indicated with a skin marking pencil or a drop of colored antiseptic solution. Only those causing wincing tenderness should be injected. Procaine injections will cure the great majority of muscle, fascia and ligament pains. Relief is only temporary, though often gratifying, if an organic cause is still at work. In the long term view such injections must be considered as only a part of the treatment of osteoarthritis and rheumatic conditions. The correction of posture, removal of foci of infection, reduction of weight, avoidance of chilling and overwork and the daily use of "limbering up" exercises must all be considered.

Rupture of Rectosigmoid by Compressed Air.—The subject of the report by Swenson and Harkins was a man aged 43 who was hospitalized from an industrial plant with the history that an hour before admission, while he was bending over, a fellow worker turned a compressed air hose at the patient's buttocks and released a sharp blast of air. The patient fell to the floor, immediately felt sharp abdominal pain and noted that he was "blown up like a balloon." Physical examination was negative except for considerable abdominal distention, rigidity and tenderness. The abdomen was highly tympanitic to percussion. A diagnosis of traumatic perforation of the rectosigmoid was made and immediate operation was decided on. Continuous gastric suction was begun and the operation was done under spinal anesthesia. When the peritoneum was opened, at least 2 liters (possibly 3 to 4 liters) of air gushed out under sufficient pressure to cause a whistling sound and resulting in appreciable collapse of the distention. The bowel was explored from one end of the rectum to and including the stomach, and four lacerations in the rectum and rectosigmoid were found. The remainder of the bowel showed considerable edema. The lacerations were repaired and the patient's recovery was comparatively uneventful. This case brings the total number of cases of rupture of rectum and of rectosigmoid caused by compressed air to 64. Immediate operation is indicated when the condition is diagnosed or suspected.

American Review of Tuberculosis, New York

49:1-114 (Jan.) 1944

- Tubercle Endotoxin in Treatment of Tuberculosis in South African Natives. E. Grasset.—p. 1.
- Radiation Therapy for Obstructing Tuberculous Hilar Lymph Nodes: Case Report. K. Freireich.—p. 31.
- Lower Lobe Bronchiectasis Associated with Tuberculosis. E. B. Mitchell and T. F. Thornton Jr.—p. 38.
- Contact Cases: Relation to Type of Case to Which They Are Exposed and to Age. G. E. Harmon and B. H. Douglas.—p. 48.
- Sexual Desire in Tuberculous Women. Margaret Haggan.—p. 53.
- *Rheumatic Diseases and Tuberculosis. E. Loewenstein.—p. 58.
- Ingestion Tuberculosis in Normal and in Vaccinated Rabbits: "Hematogenous Pulmonary Tuberculosis" in Man Considered. E. M. Medlar and K. T. Sasano.—p. 78.
- Effects of Amigen and Amino Acids on Growth of Tubercle Bacilli. P. D. Crimm and Veronica F. Martos.—p. 94.
- Experimental Tuberculosis in Hypophysectomized Rats. M. M. Steinbach, C. J. Duca and N. Molomut.—p. 105.
- Carbol Fuchsin in Propylene Glycol for Rapid Staining of Tubercle Bacilli: Preliminary Report. T. G. Randolph and R. F. Mikell.—p. 109.
- Loewenstein's Medium: Improved Method of Preparing It. Ruby G. Kelly and E. A. Murphy.—p. 110.

Rheumatic Diseases and Tuberculosis.—Loewenstein emphasizes that it is the presence of tubercle bacilli in loco morbi that proves the nature of the disease and not the reaction of the tissue. The tubercle is only a facultative phase in the life cycle of the tuberculous focus. The presence of the tubercle bacilli is a direct proof, the reaction of the tissue an indirect evidence. Roessle came to the conclusion that tuberculosis and rheumatism are two representatives of allergic disease and that Aschoff's nodules represent the anatomic substratum of allergy. It has been shown that rheumatism is a disease not of the joints alone but of the whole mesenchyme. Tubercle bacilli have been found in the blood and joint fluid of patients suffering from acute rheumatic fever, endocarditis and chorea. Tubercle bacilli have been found post mortem in the blood, heart, spleen and tonsils and in rheumatic polyarthritis, endocarditis and chorea. They may be demonstrated in the appar-

ently normal spinal fluid of patients with chorea and sometimes in the urine. Lymph nodes in the neighborhood of affected joints show many fresh tubercles and bacilli in microsections. The anatomic appearances, especially of the heart, rather approximate those of tuberculosis than those of streptococcal infection. Streptococci are rarely found in the blood; they cannot produce serous effusions. The sedimentation rate of rheumatic fever is closely similar to that in miliary tuberculosis. Tubercle bacilli can be found not only in the blood of patients with rheumatic eye diseases but also in the tissues of the eye in cases of iritis, iridocyclitis, choroiditis and sympathetic ophthalmia. Foci similar to the foci in miliary tuberculosis can be found by ophthalmoscopy in 61 per cent of the cases of acute rheumatic fever. Aschoff's nodules are frequently found in the heart of the tuberculous cadavers without rheumatism in the clinical history. Untreated patients with rheumatic fever have developed miliary tuberculosis. Antibodies against tubercle bacilli are present in over 80 per cent of rheumatic patients. The curve of tuberculin sensitivity shows a characteristic change from anergy in the first few days to hyperergy in the convalescence. The treatment with tuberculin in homeopathic doses has been recommended. The same anatomic appearances as those found in rheumatic fever can be produced by pure strains of tubercle bacilli after reinjection in the peritonsillar region of rabbits. The occurrence and the recurrence of rheumatic fever are dependent on an endogenous or exogenous reinfection; superimposed infections may mobilize sleeping foci of tubercle bacilli.

Anesthesiology, New York

5:1-112 (Jan.) 1944

- *Comparative Value of Various Parenteral Fluids. G. A. Bradasch.—p. 1.
- Responsibility of Anesthetist in Reducing Operative Complications of Thoracic Surgery. H. C. Maier.—p. 11.
- Transfusions of Blood and Plasma. T. H. Seldon, J. S. Lundy and R. C. Adams.—p. 22.
- Ionization of Air: Method for Dispersion of Charges of Static Electricity. H. C. Slocum and R. Finvold.—p. 33.
- Spinal Anesthesia with Monocaine Formate: Results in 2,230 Cases. E. A. Rovenstine and Virginia Apgar.—p. 40.
- Soda Lime Containing Indicators. J. Adriani.—p. 45.
- Continuous Spinal Anesthesia. D. E. Hale and C. M. Shaar.—p. 53.
- New Modification of Conventional Laryngoscope and Technic for Laryngoscopy and Technic for Laryngoscopy. S. C. Wiggin.—p. 61.
- Spinal Anesthesia in Therapy of Pulmonary Edema: Preliminary Report. S. J. Sarnoff and H. W. Farr.—p. 69.

Comparative Value of Various Parenteral Fluids.—Bradach reviews the physiologic factors that enter into the maintenance of a normal body fluid balance, giving particular attention to the role of water, the electrolytes and the blood proteins. Crystalloids are effective for replacing lost electrolytes and for combating metabolic disease. Because of ready diffusibility, crystalloids generally are not satisfactory as supportive agents in hemorrhage or shock. Acacia, because of its toxic effects, is not entirely satisfactory as a parenteral supportive fluid even though it possesses suitable colloidal properties. Bovine plasma, bovine albumin, isinglass, crystalline hemoglobin, human ascitic fluid, cadaver blood and placental blood, because of limited availability or uncertain properties, cannot be considered practical agents for general parenteral use. Pectin, because of its plasma-like osmotic properties, easy availability and nonantigenic qualities, has promise of being a suitable supportive agent for parenteral use. Human serum albumin and human plasma are agents of unquestionable value as parenteral supportive fluids. Ease of storage and transport and the stability of these agents make them highly valuable as blood substitutes. Whole blood remains the best agent for treatment of acute blood loss or shock.

Archives of Otolaryngology, Chicago

39:1-108 (Jan.) 1944

- Changes of Temporal Bone in Leukemia and Osteitis Fibrosa. H. Brunner.—p. 1.
- Effect of Sphincteric Action of Larynx on Intra-Abdominal Pressure and on Muscular Action of Pectoral Girdle. J. J. Pressman.—p. 14.
- Benign Nontuberculous Bronchial Stenosis. H. W. Schmidt.—p. 43.
- Cancer of Larynx: Radiotherapeutic Test as Aid in Choosing Between Operation and Irradiation. M. Cutler.—p. 53.
- New Contributions on So-Called Otosclerosis of Chickens. F. Altmann.—p. 59.
- Otitis Media and Complications. B. R. Dysart.—p. 87.

Canadian Journal of Public Health, Toronto

35:1-48 (Jan.) 1944

- Housing and the Health Officer. C. E. A. Winslow.—p. 1.
 Britain's Development of Preventive Medicine. A. S. MacNalty.—p. 10.
 Venereal Disease Control Program in United States. J. R. Heller Jr.—p. 16.
 Community Action in Venereal Disease Control. W. Clarke.—p. 26.
 Recent Developments in Milk Control. C. K. Johns.—p. 33.

Canadian Medical Association Journal, Montreal

50:1-102 (Jan.) 1944

- What the General Practitioner Should Know About Chemotherapy of Bacterial Infections. E. E. Osgood.—p. 1.
 Malnutrition in Canada. L. B. Pett.—p. 9.
 Water-Borne Typhoid in Western Canada. M. R. Bow and J. H. Brown.—p. 14.
 *Use of Acrylic and Elastic Resin Prostheses for Facial Deformities. Eleanor Swezey, H. Baxter and R. Copeman.—p. 16.
 Myocardial Abscesses in Subacute Bacterial Endocarditis. J. E. Barnard and M. J. Nareff.—p. 21.
 Plasma Proteins in Shock. E. S. Mills.—p. 24.
 *Treatment of Angina Pectoris and Peripheral Vascular Disease with Sex Hormones. G. F. Strong and A. W. Wallace.—p. 30.
 Medical Aspects of Casualty Insurance. A. P. Guttman.—p. 33.
 Catamnestic Study of 267 Neuro-syphilitic Patients. F. Katz and Barbara Dean.—p. 39.
 Headache of Nasal Origin. G. E. Tremble.—p. 43.
 Epidemic Parotitis (Analysis of 250 Cases in Male Adults). E. M. Worden.—p. 47.
 Acute Myelitis Following Measles. L. N. Pearlman and W. T. Shirreff.—p. 50.
 Experience with Hingson-Edwards Technique of Continuous Caudal Analgesia. J. S. Chaikoff.—p. 52.
 Tuberculosis of Bursa in Region of Hip Joint. J. Farr.—p. 60.

Acrylic and Elastic Resin Prostheses for Facial Deformities—Swezey and her collaborators call attention to a new synthetic resin for surgical prostheses. The resin is an acrylic substance. It comes in the form of two powders (pink and colorless) and a liquid which binds them. Small quantities of other colors also are supplied. These powders can be mixed in varying amounts until the required shade and translucency is obtained. An elastic resin has been developed recently which, after processing, is rubber-like in many of its characteristics and is processed, like acrylic resin, with heat and pressure. The authors have made an ear, part of a nose and a whole nose of both elastic and the acrylic resin and have found the former to be a more suitable medium, although the latter has many desirable qualities. All 3 of the patients for whom the authors made prostheses had carcinoma. The partial nose is a temporary restoration until a surgical operation can be performed, but the other two are permanent prostheses. The resin is light, translucent and easily manipulated and is unaffected by ordinary heat, cold, moisture and light. It is tolerated by tissues, easily duplicated from the original mold and inexpensive. It can be trimmed and repaired with a hot spatula. It can be stained in a graduation of shades.

Sex Hormones in Angina Pectoris and Peripheral Vascular Disease.—Patients were chosen for this treatment who had the typical syndrome of pain on effort relieved by rest and glyceryl trinitrate and who had other signs suggesting that the angina was arteriosclerotic in origin. All of these patients had suffered from angina for a period of from several months to several years and they knew the relief they obtained from glyceryl trinitrate. Patients were asked to keep a day by day record of anginal attacks and the number of glyceryl trinitrate pills necessary in each day to control attacks. All were started on a series of twelve injections given at intervals of four to five days; some received more and some less. In men each injection consisted of 25 mg. of testosterone propionate and in women each injection was 5 mg. of estradiol dipropionate. Only 4 cases of peripheral vascular disease were treated. Seventeen of 20 patients with angina pectoris showed some improvement. Of these 6 showed fairly definite improvement which lasted from three months to one year; the rest showed slight to moderate improvement which did not last long after treatments stopped. Of the 4 patients with peripheral vascular disease treated 1 reported considerable and 2 slight improvement. The fourth reported no improvement. None of these patients showed definite change in pulsation in the dorsalis pedis arteries.

Cancer Research, Baltimore

4:1-72 (Jan.) 1944. Partial Index

- Genetic Character of Neoplastic Cells as Determined in Transplantation Experiments, with Notes on Somatic Mutation Theory. J. Furth, M. C. Boon and N. Kaliss.—p. 1.
 Genetic Analysis of Induction of Tumors by Methylcholanthrene: VI. Epidermoid Carcinomas and Associated Tumors in Mice of F₁-F₂ Generations of NIH Descent. W. L. Williams and L. C. Strong.—p. 11.
 Progesterone Treatment of Uterine and Other Abdominal Fibroids Induced in Guinea Pig by Alpha-Estradiol. A. Lipschütz and M. Maas.—p. 18.
 Effect of Testosterone Propionate on Adrenals and on Incidence of Mammary Cancer in RIII Strain of Mice. J. Heimann.—p. 31.
 Prothrombin Concentration in Plasma of Normal and Leukemic Rats. E. Sturm.—p. 35.
 Study of d-Amino Acid Oxidase, Uricase and Choline Oxidase in Livers and in Isolated Liver Cell Nuclei of Rats Bearing Transplanted Tumors. T. H. Lan.—p. 37.
 Specific Injurious Action of Alloxan on Pancreatic Islet Cells and Convulsed Tubules of Kidney. Comparative Study in Rabbit, Dog and Man. A. Brunschwig and J. G. Allen.—p. 45.
 Metaplasia of Bronchial Epithelium in Rats Following Application of Benzpyrene. T. F. Thornton Jr., and W. E. Adams.—p. 55.

Illinois Medical Journal, Chicago

85:1-52 (Jan.) 1944

- Postoperative Pulmonary Embolism: Statistical Analysis of Cases Occurring During 1940 in St. Anthony's Hospital. R. Johnson.—p. 13.
 Malingering in Nurses with Hysteria. I. R. Sonenthal.—p. 17.
 Therapeutic Diets and War Food Rationing. H. K. Sealiff and Ruby M. Benedict.—p. 22.
 *Influence of Draft on Formation of Psychoses in Women. M. Wallenberg.—p. 25.
 Study of Results of Electric Shock Treatment. R. Gronner.—p. 29.
 Non-specific Ulcerative Colitis—Bloody Flux. C. J. Drueck.—p. 35.

Influence of Draft on Psychoses in Women.—Wallenberg says that among the female admissions at the Manteno State Hospital there were a number whose histories indicated that the onset of mental symptoms was connected with the prospective or actual draft of a near relative. The records of 12 such patients were carefully studied. Objective exploration revealed that in no case was the drafting of a love object the only precipitating factor. Other severe traumas were present (the death of a brother, a drunken husband, disappointment in love), all clearly showing the conflict of ambivalence. In many cases the draft merely represented a rationalization, a displacement from the conflict centering around the actual or ideational loss of an ambivalently loved person. The inner need for rationalization unconsciously finds expression in the information advanced by relatives and friends who seek to explain the symptoms of the patient in terms of concrete causes. The information from relatives, although rendered in good faith, proved to be misleading with regard to the actual onset or origin of the psychosis.

Journal of Aviation Medicine, St. Paul

14:329-400 (Dec.) 1943

- Pneumometer with an Application in Aviation Medicine: Effect of Low Atmospheric Pressure. H. Lampert, R. D. Brookes, C. W. P. Walter and T. J. Putnam.—p. 336.
 Effect of Pressure on Carotid Sinus at Various Altitudes: Case Reports. L. Palitz, T. Frist and E. Kocour.—p. 346.
 *Flicker Fusion Tests as Measure of Fatigue in Aviators. A. Graybiel, J. L. Lilienthal Jr. and O. Horwitz.—p. 356.
 Report of Case of Severe Anoxic Anoxia with Recovery. R. L. Ward and O. C. Olson.—p. 360.
 *Airsickness in Bomber Crews. D. M. Green.—p. 366.
 Aeroneuroses in Bomb Training Unit. D. M. Green.—p. 373.
 Medical Problems of Civil Air Patrol, Office of Civilian Defense. J. G. Stubenbord III.—p. 373.
 Notes on Classification, Selection and Training. B. Kaufman.—p. 383.

Flicker Fusion Tests as Measure of Fatigue in Aviators.—Graybiel and his associates point out that in a study of the fatigue which results from mental stress or hazardous occupation rather than muscular effort the most pressing problem is establishing some objective measure of the fatigue. A study by the U. S. Public Health Service on fatigue in truck drivers indicated that flicker fusion tests, in addition to a battery of psychomotor tests, gave some evidence of the deterioration which occurred. The authors studied the flicker fusion test as a measure of fatigue in aviation pilots. The 32 subjects tested were naval aviators acting as instructors. Their

flight duties consisted in dual instruction and the supervision of formation flights. Flicker fusion levels were measured when the pilot reported to the squadron in the morning and again shortly after completion of the last flight of the day. At the time of the flicker measurement data were recorded regarding hours of sleep during the preceding night, time of last meal, hours flown and sense of being "tired" or "not tired." Control observations were made on days when bad weather prevented flying. Flicker fusion was tested by means of an electronic oscilloscope. One hundred and forty-three double determinations of flicker fusion were made. No significant correlation was discovered between the alteration in flicker fusion frequency and the state of fatigue. The flicker fusion test offered no promise as an objective measure of fatigue in aviation.

Airsickness in Bomber Crews.—Green made a survey of 1,006 flying personnel in a combat bomber crew training unit. An average of 1 in 6 of all personnel suffered attacks of airsickness regardless of previous air experiences. Symptoms vary widely in the individual on successive days and among different persons exposed to a particular air situation. Gastric complaints range from sensations of fullness or vague discomfort through gradations of nausea to vomiting and retching. Loss of appetite may occur. Sweating and pallor often are absent. Some complaining of being hot and dry seek cold air. Various head sensations are mentioned, including aching, dizziness, pressure and tightness. Many speak of a generalized feeling of nervousness. Some are unable to localize their symptoms beyond stating that they feel "sick all over." Pilots are least susceptible crew members, but, despite the advantages of over two hundred flying hours, about 1 in 8 suffered attacks subsequent to joining the unit. Symptoms occurred usually while riding as passenger or copilot and were overcome on taking over the controls. Approximately 80 per cent of men developing airsickness in the combat plane were occupants of the navigator's compartment, although this section of the aircraft approximates the center of gravity and is the area of least relative motion. Lack of opportunity for visual orientation may influence susceptibility in this section, for occupants at times avert or suppress sickness by moving forward to the pilot's compartment. Observations suggest that airsickness primarily is not a motion sickness but a true aeroneurosis. On this hypothesis a therapeutic approach was devised. Thirty-five crew personnel grounded for repeated severe airsickness were scheduled in small groups for daily flights of graded duration. Prior to take off, pentobarbital sodium 0.100 Gm. and atropine sulfate 0.0013 Gm. were administered orally to each man. On successive flights personnel were rotated as far as possible through different positions in the airplane. On reaching a stage in which a three hour period caused no distress, transfer to the combat plane was made and medication gradually eliminated. Ten men were restored to full flying status and have given no indication of relapse. Nine have improved to the point of being placed on crews on probationary status. Four were transferred prior to completion of treatment. Six showed no perceptible improvement.

Military Surgeon, Washington, D. C.

94:1-64 (Jan.) 1944

- Health and Physical Efficiency in Naval Warfare. W. L. Mann Jr.—p. 4.
Diagnosis of Rickettsial Diseases: Report of Unusual Case with Jaundice. G. C. Cheney and E. J. Denenholz.—p. 9.
Some Domestic Problems in Military Sanitation. A. Laird.—p. 20.
Hyperglycemia Due to Suspected Pancreatic Trauma: Report of Case. A. J. Jensen and C. C. Gill.—p. 26.
Torula Histolytica Meningoencephalitis: Report of Case; Spinal Fluid Studies and Autopsy Report. W. S. Hagen.—p. 29.
Diagnosis of Meningococcemia: Presentation of 3 Cases. J. M. Blumberg and J. M. Suter.—p. 35.
Streamlined First Aid. H. S. Johnson.—p. 41.

New Jersey Medical Society Journal, Trenton

40:453-500 (Dec.) 1943

- Early Treatment of Thermal Burns—I. J. M. Carlisle.—p. 459.
Clinical Importance of Disturbances of Protein Metabolism. A. O. Wilensky.—p. 462.
Sulfadiazine in Acute Follicular Infections of Tonsils and Pharynx. M. Kraemer.—p. 468.

Rhode Island Medical Journal, Providence

27:1-48 (Jan.) 1944

- Planning for Security. E. M. Porter.—p. 9.
Primary Atypical Pneumonia, Etiology Unknown. F. B. Cutts and H. A. Lawson.—p. 11.
Recent Epidemic of Poliomyelitis. E. J. West.—p. 13.
Kenny Treatment of Poliomyelitis. W. A. Horan.—p. 16.

Tennessee State Medical Assn. Journal, Nashville

36:453-492 (Dec.) 1943

- Scientific Use of Physical Therapy. Mildred F. Heap.—p. 455.
A, B, C's of "Social Security"—Present and Proposed. C. A. Jackson.—p. 457.
Meningococcemia with Bilateral Adrenal Hemorrhage (Waterhouse-Friderichsen Syndrome): Report of 2 Cases. M. Kasich and S. Disick.—p. 464.
37:1-40 (Jan.) 1944
Federal Plan for Providing Obstetric and Pediatric Care for Wives and Infants of Servicemen. L. F. Foster.—p. 1.
Successful Treatment of Gout. E. C. Bartels.—p. 5.
Unsolved Problems in Preoperative and Postoperative Care of Patients with Hyperthyroidism. C. E. Rea.—p. 10.
Venereal Disease Case Reporting as Protection to Physician-Patient Relationship. M. C. Brown.—p. 15.
Coronary Occlusion. S. S. Riven.—p. 18.

Virginia Medical Monthly, Richmond

71:1-56 (Jan.) 1944

- Medical Aspects of Aircraft Carrier Warfare. J. Q. Owsley.—p. 4.
Mechanism of Esophageal Voice Following Laryngectomy. E. T. Gatewood.—p. 9.
Clinical Management of Lobar Pneumonia. J. F. Waddill.—p. 14.
Treatment of Burns. A. J. Mourot.—p. 25.
Outlook for Nursing Profession. J. M. Emmett.—p. 29.
Study of Three Thousand Blood Transfusions. A. Klein.—p. 33.
Practical Method for Localization and Removal of Foreign Bodies. W. S. Hotchkiss.—p. 37.
Use of Penicillin in Statu Nascendi. F. J. von Gutfeld.—p. 39.

War Medicine, Chicago

5:1-70 (Jan.) 1944

- Psychoses in Officers in World War II. A. M. Duval.—p. 1.
Causes of Pain in Feet After Prolonged Immersion in Cold Water. J. C. White and S. Warren.—p. 6.
*Bacillary Dysentery: Bacteriologic and Clinical Analysis of 251 Cases Occurring in Army Camp. J. W. Adams Jr. and R. T. Atwood.—p. 14.
Injuries to Peripheral Nerves: Review of Recent Literature. C. Brenner.—p. 21.
Value and Shortcomings of Cultural Method in Diagnosis of Gonorrhea with Special Reference to Use of Peizer Medium. M. Trowbridge Jr. and Ruth M. McConkey.—p. 36.
Experimental Burns: III. Changes in Plasma Albumin and Globulin. C. Lischer, R. Elman and Harriet W. Davey, with technical assistance of H. Riedel.—p. 43.
Studies on Endamoeba Histolytica: III. Destruction of Cysts of Endamoeba Histolytica by a Hypochlorite Solution, Chloramines in Tap Water and Gaseous Chlorine in Tap Water of Varying Degrees of Pollution. S. L. Chang.—p. 46.
Simple Rapid Test for Detection of Sulfonamide Compounds in Urine: Preliminary Report. R. Hubata.—p. 56.

Bacillary Dysentery in Army Camp.—Adams and Atwood give an account of their experience with the isolation and identification of pathogenic enteric organisms from the stools of patients admitted to the station hospital, Camp Claiborne, Louisiana, from September 1941 to October 1942 with illnesses diagnosed clinically as dysentery, diarrhea or gastroenteritis. Cultures were taken of approximately 2,000 stools from patients with diarrhea. From these cultures 642 strains of organisms considered to be pathogenic were isolated from 251 patients with definitely established dysentery. A member of the Shigella group was isolated from 226, or 90 per cent, of the patients. Of these, 178, or 70.9 per cent of the total, yielded Shigella paradysenteriae (Andrewes V-Z spectrum) and were benefited by therapy with a sulfonamide compound. Twenty, or 8 per cent, of the total number of patients yielded Shigella Newcastle and were probably benefited by treatment. Twenty-eight infections due to Shigella sonnei and Shigella alkalescens did not respond to chemotherapy. A member of the Salmonella group was recovered in 6 cases. An organism belonging to the paracolon group was recovered in 33 cases in which this organism was believed to be of pathologic significance.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:805-840 (Dec. 25) 1943

- Population Problem of India. D. B. Blacklock.—p. 805.
 *Infective Hepatitis: With Special Reference to Oral Hippuric Acid Test. I. Gordon.—p. 807.
 Significance of Blood Pressure Readings in General Surgical Work, with Special Reference to Cardiac Index. H. Dodd.—p. 811.
 Continuous Administration of Intravenous Anesthesia: A Simple Method. F. W. Roberts and B. A. Sellick.—p. 813.
 Fatal Case of Cerebral Malaria. I. B. Sueddon.—p. 814.

Oral Hippuric Acid Test in Infective Hepatitis.—Gordon reports that between December 1941 and September 1942 168 cases of infective hepatitis were admitted to a hospital in the Middle East forces. Two fairly distinct types of onset were recognized: (1) cases with febrile attack and (2) cases without febrile attack. In the 88 patients with febrile attack the onset was usually sudden, often with shivering and occasionally with a rigor. Fever ranged from 100 to 102 F., the highest recorded temperature being 104 F. The pulse rate usually varied from 80 to 90 and often dropped to 50 or 60 when jaundice became established. Headache was noted in 85 per cent. Malaise, rarely amounting to lethargy, was almost constant. Two thirds complained of backache and/or pains in the limbs. Gastrointestinal symptoms were universal. The average duration of the prodromal stage before the appearance of jaundice was 5.8 days. In the 80 cases without a febrile attack the preicteric stage was of shorter duration, averaging 4.1 days. Gastrointestinal symptoms were evident from the first and, though similar to those in the "febrile" group, were not so constantly present. After the appearance of jaundice the physical findings and subsequent clinical course were almost identical in the two groups. The average duration of icterus was twenty-four days. The liver was palpable in 50 per cent of the cases. Gross hepatomegaly was associated with prolonged jaundice, and the larger the liver the longer was the duration of icterus. The diagnosis in the preicteric stage is often difficult and in many cases will remain uncertain until bile pigment appears in the urine. Hippuric acid tests for liver function by the oral method were performed in 14 cases when icterus was at about its height. Evidence of impaired function was found in all cases. Recovery of liver function (as measured by the hippuric acid test) appears to be slow. In the convalescent stage of the illness, when icterus had just disappeared from the skin but remained in the sclerotics, evidence of liver insufficiency was demonstrated in 19 (65 per cent) of the 29 cases tested. Second attacks appear to be no worse than the first.

Journal of Royal Naval Medical Service, London

29:225-286 (Oct.) 1943

- Frost Bite. J. Hamilton.—p. 225.
 Abdominal Lesions Requiring Urgent Surgery. J. F. M. Campbell.—p. 229.
 Choice of Anesthesia for Abdominal Surgery at Sea. J. Lees.—p. 233.
 Investigation into Incidence of Trachoma in Maltese Islands, Its Early Diagnosis and Mode of Spread with Special Application to Armed Forces. D. P. Gurd.—p. 237.
 Hypovitaminosis C and Infective Gingivitis. J. W. Buchanan.—p. 249.
 External Otitis. G. A. Ballance.—p. 255.
 Observations on Thirst. R. S. Allison and M. Critchley.—p. 258.
 Medical Arrangements for Action in Small Ships. R. G. Allen.—p. 266.
 Acrylic Resin Splints. R. L. V. Henderson.—p. 268.
 Second Attack of Meningococcal Meningitis Preceded by Meningococcal Septicemia. G. S. Brewis.—p. 268.
 Case of Geniculate Herpes Simulating Acute Mastoiditis. C. D. Coode.—p. 269.
 Air Raid Casualty: Severe Frontal Lobe Injury. D. F. Smith.—p. 271.
 *Pulmonary Signs in Malaria. E. M. Stirk.—p. 272.

Pulmonary Signs in Malaria.—Stirk reports a feature of malaria which has been observed in an area in which malaria, sandfly fever and respiratory infections are common. It has been his experience that the initial symptoms in the three disease groups may be very similar until blood films have been taken to establish or eliminate the possibility of malaria. The author mentions 4 cases to illustrate this fact. He describes a case which demonstrates the development of an early pneumonia after the malarial pyrexia had been controlled. This case is important because it illustrates that sulfapyridine and quinine

are not incompatible when given concurrently. The author thinks that the association of bronchitis and incipient pneumonia with proved attacks of malaria is more common than medical writings suggest. In the region in which he made his observations approximately 10 per cent of the patients with malaria presented pulmonary symptoms.

Revista de Otorrinolaringología, Santiago

3:49-160 (Sept.) 1943. Partial Index

- *Bacteriologic, Clinical and Therapeutic Study of Acute Otitis Media in Children. A. Latorre A. and F. Landa P.—p. 63.
 Value of Bronchoscopy in Bronchopulmonary Tuberculosis. M. D. Rodriguez D.—p. 77.

Acute Otitis Media in Children.—Latorre and Landa studied 143 cases of acute otitis media in children whose ages ranged from 1 month to 11 years. *Streptococcus hemolyticus* was found to be the commonest infective agent, being responsible for 89 cases (59.30 per cent) of the otitis media in this group. This organism was associated with the staphylococcus in 36 cases. Pneumococci were found in 32 cases (22.37 per cent). In the great majority of cases (78.32 per cent) otitis media healed without complications or sequelae in from five to twenty-five days. In 18 cases (12.58 per cent) the acute process was followed by chronic otitis. Of 4 cases in which mastoiditis developed, 2 responded well to medical treatment and 2 required surgical intervention. In 11 cases retroauricular subperiosteal abscesses formed. Bell's palsy in 1 case was promptly controlled by a mastoid operation. Meningeal and vascular involvement were not observed. There was no death. Treatment consisted, as a rule, in paracentesis, local heat, ear washes and nasal instillation. Sulfanilamide and sulfathiazole were used in 45 cases, of which 37 healed completely in an average period of twenty days and chronic otitis developed in 7. The results showed that sulfonamide treatment is not more effective in otitis media than the nonchemotherapeutic procedures used.

Revista de Tuberculosis, Havana

7:147-400 (April-June) 1943. Partial Index

- *Air Cysts of Lung in Children: Clinical, Roentgen and Anatomic Study. T. Valledor, E. Martel, R. Fuste and A. Fernandez Baltrons.—p. 147.
 *Acute Edema of Lung in Pulmonary Tuberculosis. A. Fernandez Conde, E. Alvarez Lastra and R. Meneses Mañas.—p. 282.

Cystic Disease of Lungs in Children.—Valledor and his collaborators report observations on 17 young children with cystic disease of the lungs. The majority of the patients were newborn infants and infants. There was neither syphilis nor tuberculosis in their family histories. A necropsy was performed on 3 patients. Cystic disease of the lung is a congenital malformation having its origin in a mesodermal hypoplasia of the bronchi and a zone of lung parenchyma. The latter remains in the stage of fetal development. Air cysts of the lung are always multiple, although in some cases apparently, but not really, solitary. The age at which the clinical symptoms appear is variable. Latent forms are rare. The cysts are frequently complicated by recurrent respiratory disease, which is controllable by early sulfonamide therapy. The most frequent clinical forms of the disease in children are those with recurrent attacks of more or less acute dyspnea, those with chronic or recurrent disease of the respiratory tract and those with pulmonary suppuration. The diagnosis of these types is confirmed by bronchography and tomography. The prognosis is grave. Lobectomy or pneumonectomy is the only effective therapy.

Acute Edema of Lung in Pulmonary Tuberculosis.—According to Fernandez Conde and his collaborators edema of the lung in pulmonary tuberculosis is rare. A man with bilateral pulmonary tuberculosis, while being hospitalized for observation, suddenly died in an attack of asphyxia. The post-mortem showed besides lesions of bilateral pulmonary tuberculosis acute edema of the lungs without involvement of any other organ. The authors believe that in pulmonary tuberculosis acute depression of the defense mechanisms with consequent loss of the immunoallergic balance is the cause of a perifocal edematous reaction of tuberculous nodules. Edema rapidly passes to the pulmonary alveoli because the pulmonary capillaries are hyperpermeable in pulmonary tuberculosis.

Book Notices

Managing Your Mind: You Can Change Human Nature. By S. H. Kralnes, M.D., and E. S. Thetford. Cloth. Price, \$2.75. Pp. 374. New York: Macmillan Company, 1943.

This is one of the better written self-help books. It presents and analyzes the difficulty which any one would meet in adjusting to his environment. The major thesis of the book is that "man is a total organism with both physical and psychological entities which are not separate." The authors feel that an individual to be in perfect health must have excellent physical health as well as sound mental health, which involves control of our emotional states. The entire book is given over to demonstrate the validity of the statement that one "can change one's mind." It is a detailed explanation of the technic whereby the external situation can be controlled by the individual, and it guarantees that the individual can learn to develop such control of mind, body and emotion that they will work together smoothly. They distinguish between emotional symptoms and physical symptoms. They feel that the individual must understand himself in terms of his elemental primary needs as well as in terms of the social demands which are made on him. The book is divided into eighteen chapters. A very clever device of using thought provoking questions brings out and develops the patient's self analysis and is used together with apt illustrations well within the range of the average person's experience. It is a safe book to put in the hands of a layman. It is definitely constructive and helpful to the reader to organize his thinking. The psychologic and physiologic background is pertinent as well as sound. The technics and facts are given and the various analytic terminology brought in, where necessary, to elaborate their explanations. They argue less by analogy than most books which are developing personal achievements. They use case history illustrations conservatively. It is particularly valuable to psychiatrists who may wish to give it to patients "to point up" their thinking and to open up new avenues for further analytic exploration. Its approach to the problem of personality problems is a positive one. It has much to offer any reader who wishes to change his habits of emotional thinking and reaction to achieve the goal of all, "happiness."

Experimental Surgery: A Laboratory Guide for Undergraduate Students. By J. M. McCaughan, B.S., M.D., Ph.D., Assistant Professor of Surgery, St. Louis University School of Medicine, St. Louis. Paper. Price, \$2. Pp. 82, with 32 illustrations. St. Louis: C. V. Mosby Company, 1943.

An experienced teacher of experimental surgery for undergraduate medical students has prepared a laboratory guide for a course in this field. The manual comprises an introduction setting forth the purpose of the course and general directions for the organization of an operating team, the preparation of instruments, drapes, suture material and anesthesia. Thirteen exercises, each consisting of a chapter, deal with technic for most of the major surgical procedures in the abdomen, in the thorax and on the nervous system—in short, the whole field of operative surgery. The author has effectively combined experimental physiology, pharmacology, pathology and surgical technic. At the end of each exercise there are a bibliography and a list of questions for discussion, an appropriate chart of the animal's condition during operation to be filled out, space for postoperative progress notes and blank space for the student to make additional notes of his own. The book is adequately illustrated by clear diagrammatic line drawings, figures and charts. By way of criticism certain features may be pointed out: The author has not included a number of the most recent advances in operative technic such as the so-called aseptic bowel anastomoses and improved gastrostomies; the problems of colon versus small bowel surgery are not emphasized; in some respects the academic treatment of the subject matter is overemphasized, as in the production of peritonitis where the student is directed to infect the peritoneal cavity with sponges dipped in cultures of *B. coli* (in the reviewer's opinion a more vivid procedure might be the production of a wound in the colon that is not repaired, or the smearing of the animal's own colon contents over the peritoneal cavity). The bibliographies, while adequate enough, include a large number of references to works published ten or more years ago. Among the questions to be pondered by the student are a number of problems which are still quite

controversial among experienced surgeons. The merits of this work, however, outweigh its weaknesses, and the author is to be commended for his efforts in producing a formal plan and guide for the student in this subject. The manual is printed in mimeograph form and is conveniently bound loose leaf to permit the addition of notes and other subject matter.

Health Practice Indices. Compiled from the Evaluation Schedules Submitted for the National Health Honor Roll for the Years 1941 and 1942. Prepared by the Sub-Committee on Manual and Appraisal of Local Health Work for the Committee on Administrative Practice of the American Public Health Association. Paper. Pp. 73, with illustrations. New York, [n. d.].

This is a graphic representation by means of bar charts of various public health procedures based on actual practice in a group of reporting cities, counties and health districts. It is compiled from the evaluation schedules submitted for the National Health Honor Roll of the United States Chamber of Commerce Interchamber Health Contest. It contains charts indicating the prevalence of standard practice in communicable disease control, tuberculosis and venereal disease control work, maternal, infant, preschool and school health practices and sanitation, food control and milk control.

The information for a given activity, such as percentage of antepartum cases known to have medical supervision, is portrayed with the most favorable reports at the top and the others ranged in decreasing order toward the bottom of a horizontal bar chart. In this particular activity the cities in the upper quartile range from almost 100 per cent down to 80 per cent of antepartum cases known to have had medical supervision. The percentages in the second quartile range from 79 to 66. In the third quartile the range is from 55 to 18 and in the lower quartile from 18 to 2 or 3. In this particular instance approximately 20 per cent of the communities reporting give no data or incomplete data.

The use of such a chart to the local health administrator is by comparing his own performance with that of others through finding its position in the chart. If he is in the upper quartile he is among the best. If he is in the lower quartile or below the base among those having no data or inadequate data his community is in serious need of improvement.

Throughout the book the charts indicate that few of the public health procedures are universally well performed. Few of the best organized health departments in the nation on which these graphs are based will be found approaching 100 per cent. The graphs showing best performance are those in the oldest field of public health, namely the various branches of sanitation. Perhaps these charts contain a suggestion that before governmental medicine is extended into the field of medical care there is room for vast improvement in accepted standard public health procedures.

Fifty Years of Service: A History of the Mary Hitchcock Memorial Hospital. By Leon B. Richardson of the Board of Trustees. Boards. Pp. 80, with illustrations. Hanover, New Hampshire, [n. d.].

This book, which commemorates the completion of fifty years of service, is a history of the Mary Hitchcock Memorial Hospital since its establishment in 1893. It is a story of the growth and development of an institution, its organization and management, financial aspects, community responsibility and support, expansions and readjustments, scope of hospital service, educational activities and other functions. These factors have been described in a clear and effective manner in relation to five separate administrative periods through which the hospital has passed. The author also reviews the present needs of the institution and anticipates with confidence that in a community of resourceful and public spirited citizens the hospital will have little difficulty in meeting whatever requirements the future may impose.

Authority in Medicine: Old and New. By Major Greenwood, D.Sc., F.R.C.P., F.R.S., Professor of Epidemiology and Vital Statistics in the University of London. Boards. Price, 40 cents. New York: Macmillan Company; Cambridge: University Press, 1943.

This Linacre lecture concerns principally the extent to which the writings of Galen dominated medicine for many years and moves on to a consideration of the manner in which research goes beyond authority. The conclusion is a testimony to Walter M. Fletcher, who first headed the British Medical Research Council.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THIS WILL BE OMITTED ON REQUEST.

MORPHINE AND SHOCK

To the Editor.—In the *Bulletin of the American College of Surgeons* 28:109 (June) 1943 in the article "The Injured in Combat Zones" it is emphasized that morphine should not be given in head injuries; and in Dean Lewis's *Practice of Surgery* (vol. XII, chapter 1, p. 281) I find that, in the treatment of shock complicating cranial injuries, liberal doses of morphine should be given. Why do some authors advise against the use of morphine in the treatment of shock accompanying head injuries? Is it because of the depressive action to the respiratory centers? Doesn't the good effect of morphine in shock justify its use in spite of its ill effect on the respiratory centers?

Albert Borges, M.D., Endicott, N. Y.

ANSWER.—The hypodermic administration of morphine in the treatment of traumatic shock following head injury has its advocates and its opponents. By reason of the potent depressive action of the drug on the respiratory center, the use of liberal doses of morphine should be formally contraindicated in any type of severe shock, whether involving craniocerebral injury or not. The available evidence indicates that in head injury, unless given in minimal doses, morphine contributes to aggravation of anoxia and death. On the basis of careful work, Gurdjian, Webster and Sprunk (*Studies of the Spinal Fluid in Cases of Injury to the Head: Effect of Drainage, Isotonic Fluids, Morphine and Soluble Phenobarbital*, U. S. P., on Cerebrospinal Fluid Pressure, *Arch. Neurol. & Psychiat.* 42:92 [July] 1939) emphasized the dangers attendant on the use of morphine in cranial injury and concluded that this drug should hardly ever be used in the treatment of this condition, especially in severe cases, not only because it masks symptoms and depresses respiration, but because it produces a tremendous rise in cerebrospinal fluid pressure which may endanger the life of the patient. Phenobarbital, which is much less harmful and fairly effective in quieting these patients, may be advantageously substituted for morphine.

OXYGEN ADMINISTRATION WITH B. L. B. FACE MASK

To the Editor.—I should like to have some information on the administration of oxygen to patients unconscious from head injuries complicated by other injuries. I use a Boothby-Lovelace-Bulbulian face mask with 100 per cent oxygen at the rate of 6 to 8 liters per minute. The percentage of oxygen reaching the alveoli is one of the points in doubt. With the patient breathing about 36 to 40 times a minute and the mask held in place by an attendant, what is the probable percentage of oxygen reaching the alveoli? Are there any dangers associated with prolonged administration of oxygen under such circumstances? What percentage of oxygen administered over a prolonged period can cause damage to pulmonary tissue? Can such a percentage be reached by the use of a B. L. B. mask? References or authorities cited would be helpful.

Captain, M. C., A. U. S.

ANSWER.—In the use of oxygen equipment, if 100 per cent oxygen is inhaled it will be diluted by water vapor and carbon dioxide before reaching the alveoli. If the Boothby-Lovelace-Bulbulian face mask is used and the reservoir bag does not collapse during any inspiration, except for the dilution stated, for all practical purposes the only other gas in the alveoli will be oxygen. If during inspiration the reservoir bag collapses, the resistance of the sponge rubber disks will be overcome by air drawn in to dilute the oxygen. The amount of this dilution, i. e. the point during inspiration at which the bag collapses, will depend on the flow from the oxygen regulator and the minute respiratory volume of the patient. In a patient breathing from 36 to 40 times a minute a flow of 6 to 8 liters per minute would not keep the bag from collapsing, depending, however, on the depth of each respiration. With a respiratory rate of 40 times a minute assuming perhaps 400 cc. tidal volume, a flow of over 16 liters per minute would be required to maintain 100 per cent oxygen in the inspired air. In the case cited it would be estimated that approximately 40 to 50 per cent oxygen would be added to the air inhaled. Breathing of 100 per cent oxygen over prolonged periods, twelve to twenty-four hours, by normal persons does not cause appreciable damage of pulmonary tissues at atmospheric pressure or less. When using a mask, essentially 100 per cent oxygen may be used indefinitely without fear of damage. It is suggested that flows be turned to 10 or 12 liters per minute if high oxygen concentrations are required for patients with rapid respiration.

HEADACHES, DIPLOPIA AND FIXED PUPIL

To the Editor.—Please give me prognosis and treatment, if any, in the following case. A man aged 29 had a fractured skull in 1933 and was hospitalized for sixty-eight days. He has since been having severe frontal headaches and occasional diplopia at night, which is relieved by analgesics. In 1938 he received a slight brain concussion but was not hospitalized or put at bed rest. He has been refused by the Army and the Merchant Marine because of lack of any pupillary reaction to light. Examination at this time reveals blood pressure 120/80, weight 142 pounds (64 Kg.), height 5 feet 5 inches (165 cm.); examination of ear, nose and throat negative. The pupils are clear and regular, are of normal size, and show no reaction to light or in accommodation, the fundi are small but otherwise normal. There are no cranial nerve disturbances, the chest is clear, the heart normal, rate 76 per minute, rhythm regular. There are no murmurs or enlargements. The abdomen and extremities are normal. The abdominal and cremasteric reflexes are normal, deep reflexes are not present; the Babinski reflex is negative on both sides. The Wassermann test is negative; no spinal Wassermann test has been made.

M.D., New York

ANSWER.—A fractured skull of ten years ago would have no bearing on the patient's present headaches and double vision. Lack of pupillary response suggests syphilis in spite of the negative Wassermann reaction. A spinal fluid Wassermann test would probably be in order with examination of the pressure at the time. A brain tumor is the only other possibility.

INDUCTION OF JAUNDICE

To the Editor.—A selectee has been deferred from military service on account of "subclinical jaundice." The question of the legitimacy of this claim has come up, and I wish to know whether it is possible for the condition "subclinical jaundice" to be self induced; that is, whether it is possible for a person to take bile salts by injection or by mouth or to raise his icterus index above normal by any other means in order to receive this classification.

M.D., North Carolina

ANSWER.—It is quite possible for jaundice to be self induced. Many of the coal tar derivatives may cause mild degrees of jaundice in sensitive persons. The following are but a few of the many drugs which are known to cause jaundice: chloroform, toluene, benzene, carbon tetrachloride, dinitrophenol, cm-chlophen and arspenamine. During treatment of malaria with atabrine it is not uncommon to see jaundice develop. Bile salts are definitely hemolytic and may cause jaundice if injected into the blood stream, but it is not likely that it could be controlled so as to produce mild jaundice without causing other toxic symptoms. Amounts possible to be taken by mouth will not cause a normal person to have jaundice. It is well known that the determination of the icterus index (Meulengracht test) may give high values in carotenemia, and the ingestion of large amounts of carrots could influence the test to a degree sufficient to suggest subclinical jaundice.

STIMULATING DOSE OF TOXOID AFTER EXPOSURE TO DIPHTHERIA

To the Editor.—My attention has been called to the fact that some physicians give a stimulating dose of diphtheria toxoid to persons who have been exposed to diphtheria with the understanding that this would be sufficient to increase the antibody content for protection. I should like to know whether this practice is feasible.

M.D., Louisiana

ANSWER.—If some years previously the patient had been inoculated with diphtheria toxoid followed by a negative Schick test, it would be feasible to administer a stimulating dose of diphtheria toxoid if exposure to diphtheria was anticipated as a possibility. But if the person had never been immunized and was known to be susceptible, the injection of toxoid at the time of exposure to diphtheria could not be relied on for protection. Under the latter circumstances diphtheria antitoxin would be indicated. Those who are Schick negative when exposed to diphtheria should not require either toxoid or diphtheria antitoxin as a prophylactic.

TOXIC REACTION TO SULFAMERAZINE

To the Editor.—I have been neglecting to report a case of toxic reaction to sulfamerazine. On Oct. 13, 1943 a girl aged 13 was seen who had sore throat and fever. She was given sulfamerazine at the rate of 1 Gm. every six hours until a total of 9 Gm. had been administered. This medication was discontinued two days later because it seemed to make her feel worse. She complained of pain in the flanks which the family considered possible appendicitis. I saw her on October 16, at which time she had a normal temperature and complained of pain in both flanks and both sides of the abdomen (not appendicitis). Urinary output decreased, becoming scanty and bloody on October 17. On the 18th her condition was good, the urine specimen contained both gross and microscopic blood (no possibility of menstrual contamination). An uneventful recovery was made. I thought this case should be reported because the medicine was detailed to us here as peculiarly free of danger to the kidneys.

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THE DIFFICULTY OF EVALUATING DRUG TREATMENT IN SURGICAL INFECTIONS

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NLW YORK

The sulfonamides have been called the "miracle" drugs, and it is true that certain infections respond dramatically to their use. However, one finds that there are many conditions in which they cannot perform miracles and where their benefit is questionable. In fact, many cases have been reported of disastrous effects. Now penicillin comes to the fore and is called the "wonder" drug. To what limits are these new agents "miracle" or "wonder" drugs? What is the basis for these popular enthusiasms? To what degree are these misconceptions in the minds of the members of the medical profession? Are our own medical reports at fault? These questions need answers.

We have now had five or six years' experience with the sulfonamide drugs in various types of infections, and it ought to be possible to outline their indications and limitations.

The unquestioned value of sulfanilamide was clearly proved when hemolytic streptococcus meningitis responded to its use, because formerly that infection was almost invariably fatal. Furthermore, not only did hemolytic streptococcus septicemia, with a former mortality ranging around 50 per cent, show a significant drop in this figure, but the disease itself virtually disappeared from our hospitals. That is an established fact which is generally recognized.

It was inevitable that sulfanilamide should be used in all other kinds of infections as soon as its relative safety, cheapness and availability had been demonstrated. However, it was not long before sulfanilamide was being used indiscriminately by doctors and even by patients themselves with or without the advice of corner druggists or well meaning friends. It was then found that it was not the panacea that it had been thought to be but had a selective action for certain types of bacteria. The necessity for determining the bacterial nature of every infection then became apparent, and yet we still find doctors using the therapeutic test and not only running the risk of toxicity but losing the opportunity for prompt, specific treatment which might be instituted by an exact knowledge of the bacterial etiology of the infection in hand. The same thing is true for the other sulfonamides.

In the last five years many reports have appeared in the literature purporting to show the value of the newer chemotherapeutic agents in all kinds of infections,

but few of these reports have included observations of controls. In some of these reports individual cases have been described in which it seemed to the observer that the drug accomplished something which would not have been achieved without the drug. The only control was the previous treatment of the case itself. In other papers the results in a series of cases have been compared with the author's previous experience. But in most instances the controls have not been run parallel with the treated cases under the same conditions.

It would seem obvious that a series of cases under careful management and close observation cannot be compared with another series in a previous period of time not carefully studied and not under the same conditions of management. Furthermore, many other factors come into play year after year which materially serve to lessen the incidence or shorten the course of infection. For examples I need mention only such devices as the Miller-Abbott tube in peritonitis, the steadily increasing knowledge of the importance of electrolyte and protein balance and nutrition in combating infection. The seasonal variations from month to month or year to year in the virulence of organisms is too well known to warrant more than a reminder.

Many of the favorable reports of the action of the sulfonamide drugs, for example, have dealt with medical infections. In surgical infections which have in the past responded in a measure to the surgical procedure the results of an associated drug therapy have perhaps been more open to question, and it is with these that I wish to deal in this paper. Let me first point out some important differences between surgical infections and medical infections.

A COMPARISON OF "MEDICAL" AND "SURGICAL" INFECTIONS

1. Infections are considered surgical if they can be controlled by an operative procedure. Surgical infections are usually characterized either by a localized breakdown of tissue or by a collection of purulent exudate or are those associated with some kind of a wound. The surgical procedure may be a complete or partial removal of the infected tissue or it may be an incision or an aspiration which drains off or removes the liquefied tissue or purulent exudate. A medical infection, on the other hand, is a localized or generalized diffuse cellulitis with little or no breakdown of tissue or little or no gross localized confined exudation of leukocytes.

2. If a patient is to recover from a surgical infection there must usually be either a spontaneous evacuation or a surgical removal of the dead tissue or purulent exudate. If there is an operative procedure there must always be a scar resulting from the healing process. If a patient recovers from a medical infection the involved tissue or organ is restored practically to

normal with little or no gross evidence of scarring of that organ. (When tuberculous lesions break down, they frequently become surgical.)

3. In surgical infections the repair of the wound and the abscess cavity frequently demands greater resources of nutritive elements than for the restoration of tissues in medical infections in which they have not been injured.

4. Surgical infections are caused by the pyogenic or necrotizing organisms, and frequently there is a variety of species taking part in the process. This is particularly true of infected wounds. Medical infections are usually caused by a single organism or virus, although surface infections such as enteritis or colitis may permit the activity of secondary contaminants.

5. The wall of an abscess is made up of necrotic tissues and thrombosed blood vessels which may prevent immune elements or medication in the blood from reaching the focus where the organisms are living and carrying on their metabolic processes. In medical infections patent or even dilated blood vessels course through the inflamed tissue carrying any immune substance or medication which may be present in the blood, and these have a better chance of coming into close contact with the infecting organisms than in surgical infections. Furthermore there is evidence that dead tissue inactivates many of the antibacterial agents which may be applied to surface wounds or reach a focus through the blood stream.

6. On the other hand it should be noted that with surgical infections after recovery there is little evidence that any general immune reactions have developed in the course of the disease. The control of the infection may be accomplished by some "immune" reaction of the local tissues, but there is no evidence of lasting immunity. With many medical infections there is evidence of the development of immune substances which can sometimes be detected in the blood in the early stages of the infection. Frequently they play a critical role in the recovery from the disease and provide a lasting protection against it for the rest of the patient's natural life.

7. Perhaps the most important difference between medical and surgical infections is that the former are not benefited but are made worse by incision while the latter are usually made better. This is probably due primarily to the removal of dead tissue.

And yet in the early stages the surgical inflammation, which later breaks down with necrosis of tissue and purulent exudate, is similar to a medical inflammation. If a drug can be given in the earliest stages of an infection before there has been any breakdown of tissue, it seems obvious that it should have a greater effect than if given after the infection has gained a foothold and has gone on to the necrotizing stage. Obviously also the larger the dose of medicine that can be given within the low limits of toxicity, the more effective it should be. On the other hand the best results to be expected from a surgical procedure are frequently not obtained by the earliest and most extensive operation. It is true that with contaminated accidental wounds or war wounds early surgery is of the greatest importance as a prophylactic measure against infection. However, in spontaneous infections a delay in the operative procedure may be the best treatment, and the proper timing may be more important than the nature of the procedure itself.

If there has been an accidental wound or a war wound (and these wounds are always contaminated by organisms) or if there has been a surgical procedure in a spontaneous infection, the opportunity is given for the local application of the drug to the surface of the wound or infected tissues as well as for the general administration of it, while no such opportunity is offered in medical infection, except for certain involvement of visible mucous membranes such as tonsillitis, conjunctivitis, urethritis or vaginitis.

If we are going to appraise drugs in surgical infections properly, all of these, various factors must be weighed and measured. Any drug will alter the normal course of an infection to the extent to which it can slow down, either directly or indirectly, the growth or metabolism or the spread of the causative organism. The sulfonamides and penicillin seem to modify the natural course of certain infections and have no effect on others. We are in the process of finding out what their indications and limitations are, and the problem must be studied carefully and methodically and not with prejudice.

How then can drugs be appraised in the treatment of surgical infections? This question must be considered in two categories: prophylactic and therapeutic. Prophylactic treatment may be applied to those conditions which are likely to produce infections. First, the ones of greatest interest at present are the war wounds and burns. Second, and closely similar to these in many respects, are the civilian accidental wounds and burns. A third group consists of operative wounds in contaminated areas, for example operations on the alimentary tract, particularly the esophagus, lower ileum and colon.

PROPHYLACTIC STUDIES

In the prophylactic appraisal of drugs, control series are absolutely essential. One must know the incidence, severity and duration of infection in drug treated cases and in a parallel series treated in exactly the same way without the drug. Differences in percentage of infections between the two series must fulfil the requirements of the formulas of the biostatisticians in order to minimize the possibility of chance being responsible for those differences.

It is essential also that the control series be strictly comparable with the treated series. In order to be certain of this it is necessary to record all the factors in the individual cases which may play a role either in favoring or in minimizing the development of an infection. Then all the cases which present each factor may be grouped together and contrasted with those in which that factor is absent. Within those contrasting groups the controls may then be compared with the treated cases. This is the method of cross tabulation.

For example, in accidental wounds or war wounds important factors which play a role in the development of infection are a short or a long interval of time between the accident and the operation, maximum or minimum gross contamination, maximum or minimum tissue damage and complete or incomplete débridement. In order that the presence or absence of these factors may be recorded in every case which is studied, it is necessary to employ case summary sheets on which these data are listed. To facilitate the analysis of these data, these summary sheets may be so arranged that the data can be transferred to punch cards. Then the incidence, severity and duration of the infection can be readily determined for each group of major factors. While

it is true that many factors will be operating in a given case, by multiple groupings of the cases according to the presence of a common factor as compared with its absence or antithesis, by cross tabulations, some indication may be given of the relative importance of these factors.

The biostatisticians tell us that when there is a multiplicity of factors operating in any given situation the importance of any single factor may be hidden or lost sight of, but if any single factor consistently stands out its importance is thereby demonstrated.

A study of civilian accidental wounds of the soft parts, compound fractures and burns, recently reported,¹ has been going on under the direction of the Subcommittee on Surgical Infections of the National Research Council in seven clinical and laboratory units scattered over the country. An appraisal has been made of the sulfonamides in the form of sulfadiazine for general administration either alone or combined with sulfanilamide or equal parts of sulfanilamide and sulfadiazine locally. From a study of our data we have found no indication that sulfonamides used in this way prevent the development of local infection, although they apparently prevent the general spread of infection and cut down the mortality. Four of the seven units which have carried out this study are now proceeding to the appraisal of penicillin and other promising agents to see if something cannot be found to cut down materially the incidence of infection in these accidental wounds. Similar studies could and should be carried out by investigating units at the front hospitals. Likewise, similar studies should be carried out in a series of contaminated operative wounds.

Let me emphasize again, however, (1) the necessity of having parallel alternating unselected, untreated controls under the same conditions as the treated cases, (2) the necessity for uniformity of study by the use of summary sheets, (3) the grouping of cases with a common factor, (4) the analysis of data by cross tabulations and (5) the application of the criteria of significance required by competent biostatisticians.

In prophylactic studies of wound infection the following factors may play a role either in favoring or in minimizing the incidence of infection, and the appraisal of drug treatment must be considered in the light of these factors and their interplay:

1. First aid treatment before hospital admission.
2. Age and basic nutrition and condition of the patient on admission.
3. Duration of time between injury and hospital admission and operation.
4. Local and general medication before hospital admission and operation.
5. Kind, size, depth and location of the wound.
6. Degree of gross contamination and tissue damage.
7. Nature and extent of bacterial contamination.
8. Method and completeness of excision of damaged tissue.
9. Duration of operation and wound irrigation.
10. Methods of wound repair, drainage and closure.
11. Immobilization of the part and frequency of dressings.
12. Local and general medication during and after operation.
13. Measures used to prevent secondary contamination.

THERAPEUTIC STUDIES

When an attempt is made to appraise the value of drugs in established surgical infections, the problem becomes still more difficult and it must be approached

in a somewhat different way. The most important differences between prophylactic treatment and therapeutic treatment are due to the element of time. In prophylactic cases there is a fixed starting point—the moment of the injury in war wounds, the time of the accident in civilian cases, the period of operation on contaminated regions. In established infections the period of time during which the organisms have had a chance to invade the body may vary from a few hours to several years.

This covers the whole range of acute and chronic infections. While there is no sharp line between them, it is profitable to make a distinction between acute and chronic infections because there are certain factors operating in one group and not in the other. For example in acute surgical infections there may be a period in which treatment can be instituted before there is a breakdown of tissue. This gives the best opportunity for a drug to work if it is going to do so. Surgery in many cases has not been done when the patient presents himself for treatment; perhaps it should be delayed pending localization; possibly it may be obviated altogether. On the other hand a chronic surgical infection in most cases has had not one but many forms of treatment, often including several operative procedures, there is already a breakdown of tissue and the chances of drug alone being effective obviating surgical procedure is often remote. Furthermore in acute, spontaneous surgical infections there is usually a single organism operating, while in chronic infections there is usually a host of secondary invaders that must be dealt with. In acute surgical infections the patient is frequently in excellent general physical condition, while in chronic infections the nutritional status of the patient is almost always seriously altered and the blood volume, the red cells, the hemoglobin, the plasma protein and other blood elements may have changed considerably.

For these and other reasons the number of factors in established infections which must be considered are much more numerous than in prophylactic studies. In certain acute surgical infections controls can be studied, but in chronic cases it is much more difficult to line up a control series. One must either (I) let the case itself, in its previous treatment, be the control or (II) show some results in the drug treated cases not previously seen in our surgical experience.

I. Examples of the case itself in its previous course being the control may be briefly illustrated by the following cases:

A. Acute infections. 1. A boy with a boil on his leg struck his hip while sliding to third base. That evening his fellows threw him in a lake. At midnight he had a chill followed by fever of 103 F. His blood culture revealed hemolytic *Staphylococcus aureus*. Sulfathiazole and sulfadiazine for a week failed to affect the course of the disease. Pain and swelling developed in the right buttock. Incision of the buttock abscess was of only temporary benefit. Penicillin was given and his temperature fell in twenty-four hours. Blood culture became sterile but x-ray examination showed progressive destruction of the ilium. All local signs subsided and he was sent to a convalescent home. Fever recurred and a tender mass developed on the inner surface of the ilium. X-ray examination revealed further destruction of the ilium and the sacroiliac joint. Another course of intramuscular penicillin was started and continued for ten days. All symptoms and signs disappeared and did not recur. X-ray examination revealed progressive reconstruction of the bone.

1. Ann. Surg. 118: 171-186, 1943.

2. A patient with a cellulitis of the face starting with a furuncle of the chin had a spiking daily temperature of 105 and 106 F. The blood culture revealed hemolytic *Staphylococcus aureus*. The swelling of the face closed the eyes and in the neck caused progressive difficulty in swallowing and breathing. Incisions were made in softened areas. *Staphylococcus antitoxin*, neoparsphenamine and other drugs failed, and the outlook seemed hopeless. She was then given *staphylococcus bacteriophage* intravenously in increasing doses, and within twenty-four hours the breathing became easier, swallowing was tolerable, the temperature fell and the blood culture became sterile. In four days it was obvious that she was out of danger.

B. *Chronic infections*. 1. The abdominal wound became infected following a hysterectomy; the infection spread and failed to respond to various antiseptics. Gradually an ulcer formed with undermined margins. Several attempts were made to control the infection by excision of the lesion. The temperature ranged to 101-102 F. daily. Then the ulcer measured 18 by 20 cm., with undermining in all directions 8 to 12 cm. farther. It was finally recognized as a chronic, undermining, burrowing ulcer and yielded on anaerobic culture the microaerophilic hemolytic streptococcus. It was then treated with zinc peroxide suspension. Promptly the fever subsided. The undermined margins began to heal down and it was soon possible to graft the defect successfully. Three days after the zinc peroxide was started, the microaerophilic hemolytic streptococcus was not found in the cultures but in its place a green streptococcus which did not interfere with wound healing.

2. Two years before admission, a patient had had an attack of chills and fever followed by pain in the lower right part of the chest and the right upper quadrant of the abdomen. He was incapacitated for a month and then returned to work but continued to have intermittent pain in the region of the right costal margin radiating to the shoulder and occasionally periods of mild jaundice. The pain increased in severity until three weeks before admission, when malaise developed followed by a severe chill. On examination a large, tender liver was found and a high right diaphragm. The temperature ranged from 99 to 102 F. Liver damage was indicated by function tests, high phosphatase and inverted albumin-globulin ratio. Amebas were found in the stools. A diagnosis of amebic abscess of the liver was made. The patient was put on a course of emetine and iodoxyquinoline sulfonic acid for ten days. The temperature fell in two days. The liver decreased in size. Amebas disappeared from the stools, and the patient remained asymptomatic.

In this brief recital of actual cases there seems to be little doubt about the value of the therapeutic agents. But even such cases must be multiplied many times and the results repeatedly confirmed to rule out the possibility of chance. If, however, in these cases the improvement had been a matter of weeks, or months rather than hours or days, the value of the therapeutic agent would have been questionable. So the time factor must be considered in the evaluation of the drug.

II. Cases showing results not previously seen in our surgical experience may be divided into several groups, as follows:

A. Those in which surgical procedures are obviated entirely.

B. Those in which surgery may be more limited or conservative than usual.

C. Those in which surgery is necessary but in which the healing time is definitely shorter than usual.

D. Those in which surgery is performed but closure of the wound may be safely done either primarily or within a few days.

The goal of the surgeon in his battle against infections is to prevent contaminating organisms from gaining a foothold in the body or to stop promptly the

activity of organisms which have already gained a foothold when the case comes under his observation. If this can be done in the early stages before there has been a breakdown, surgery may be obviated. If this can be done by the use of a drug in cases which in our experience always go on to necrosis without the drug, we can be certain that the drug was effective in those cases. It is even more striking if surgery is obviated by the use of drugs after the breakdown has taken place, i. e. if there is a resolution of the inflammatory process and an absorption of localized exudate without the aid of surgery.

A. Infections which in the natural course of events become surgical by virtue of a characteristic local breakdown of tissue or collection of purulent exudate are in the early stages simply diffuse cellulitis of limited extent. The breakdown may come early or late, depending on the variety and virulence of the species of the causative organism and the tissues involved.

Examples of such a course of events may be given in the following brief abstracts:

I. *Acute infections*. (a) A boy complained of a sudden onset of chills and fever of 105 F. with pain in the region of the great trochanter of the right hip but was found to have free motion of the joint. The blood culture was positive for hemolytic *Staphylococcus aureus* and he was given penicillin in large doses intramuscularly. The temperature fell abruptly but the local process remained painful for several days. It gradually subsided, but in the course of time x-ray examination showed some destruction of bone in the region of the great trochanter. This did not spread, however, and gradually the area of destruction was reconstructed without the necessity for surgery, which ordinarily would have been required.

(b) A mechanic had a collar button abscess of the hand, with a small superficial blister and a small opening through the skin into a larger cavity beneath the skin. Formerly such a lesion invariably required an incision into the deep cavity. The lesion was caused by a hemolytic *Staphylococcus aureus* susceptible to a potent bacteriophage, which by simple daily instillations into the deep cavity invoked a local subsidence of the process without the necessity for surgery.

II. *Chronic infections*. (a) A woman of middle age had a large ulcer of the leg with a shaggy, pale, granulating base and undermined rolled in skin margins infected with a mixture of hemolytic streptococcus, hemolytic *Staphylococcus aureus* and *Bacillus pyocyaneus*. The base was indurated, and the surgeon planned to excise it to get rid of the infection and establish a relatively normal base. Instead the wound was sprayed daily with sodium sulfadiazine powder. Exudate diminished, the smears and cultures showed a rapidly diminishing bacterial flora, first the hemolytic streptococcus disappeared and then the pyocyaneus, and lastly the staphylococcus ceased to be active. The edges sealed down, new epithelium grew in and the wound became amenable to grafting.

(b) A bartender struck a drunken patron and sustained a tooth laceration of the back of the hand. A foul smelling infection developed in the course of a few days. Cultures revealed spirochetes, fusiform bacilli and anaerobic streptococci. The first metacarpophalangeal joint was threatened. Daily application of zinc peroxide resulted in a rapid subsidence of the inflammation and disappearance of the organisms. Without this response, invasion of the joint would probably have occurred and amputation would probably have been required.

B. In certain surgical infections past experience has shown that limited incision or excision has been ineffective and it has been necessary to incise beyond the involved area or excise the lesion by a wide margin. It has been found, however, that with the use of certain drugs a more conservative operative procedure may be effective. There is, of course, some difficulty in

judging such cases and in being certain that the procedure is more limited than would otherwise have been necessary. Clearcut examples, however, are found in the following cases:

I. *Acute infection.* A sudden onset of painful swelling of the leg extending to the thigh in forty-eight hours showed the characteristic area of bluish discoloration and bullous formation pathognomonic for hemolytic streptococcus gangrene. This area went on in four or five days to frank gangrene. In the natural course of events it is necessary to make multiple incisions extending up beyond the area of swelling into normal tissues, but in this case the gangrenous area was excised and sulfadiazine was given by mouth. The process came to a standstill with steady and fairly rapid resolution. The skin defect was then covered with a graft.

II. *Chronic infection.* In a typical case of progressive bacterial synergistic gangrene of the skin of the abdominal wall there was a large ulcer with steadily spreading, intensely painful gangrenous margin surrounded by a red raised purple zone and outside of that a zone of erythema of varying width. In the natural course of events this process can be stopped only by wide excision of the whole lesion well beyond the zone of erythema. In this case, however, a more limited excision was done at the outer margin of the purple zone followed by the application of zinc peroxide. This controlled the infection, and the favorable effect of the drug as an adjuvant to surgery seemed fairly obvious.

C. In the third group in which surgery is necessary but in which the healing time is definitely shorter than usual, the effect of drug therapy is much more difficult to evaluate and a parallel series of control cases is required to make the demonstration convincing. The time for healing is dependent not only on the control of the infection but on the original extent of the lesion, the amount of tissue injury already done and on many other factors which should be taken into consideration and recorded. Added data to indicate the control of infection are obtained by making a quantitative and qualitative study of the bacterial flora before and at frequent intervals after the surgical procedure, both in cases in which there is an accompanying administration of the drug and in the controls. Cases of this group are abstracted:

I. *Acute infection.* A young man developed a 10 cm. abscess of the anterior portion of the perineum extending up on the scrotum, which on culture yielded a hemolytic *Staphylococcus aureus*. Through the central opening potent staphylococcus bacteriophage was instilled and a silk drain inserted. There was rapid subsidence of pain, swelling and redness. The drain released copious quantities of pus, and this was the only surgical procedure. The process completely subsided, and the wound was closed in six days.

II. *Chronic infection.* A boy of 14 entered the hospital with a six weeks history of a painful swollen knee. X-ray examination revealed an abscess in the external condyle of the femur. Aspiration of the knee yielded thin fluid; 5,000 units of penicillin was instilled. The joint fluid revealed hemolytic *Staphylococcus aureus*. Next day the joint swelling was less. The bone cavity was unroofed and the cavity tamponed with China silk and fine gauze packing wet with 5,000 units of penicillin. The packing was renewed and 5,000 units instilled daily. The cavity filled rapidly with granulation tissue and healing was complete. The joint was not opened or aspirated again and returned to normal function.

D. In the last group, in which a primary or early secondary closure is done with the aid of drug in conditions which ordinarily would not permit such procedures, care must be taken in evaluation of the role played by the drug. For some time it has been recog-

nized as a sound procedure to close the wound primarily after the removal of an acutely inflamed or gangrenous appendix but not after a nephrectomy for an abscessed kidney. Some surgeons have advocated and practiced closure of the wound after excision of a gangrenous or suppurative gallbladder. Many have tried it with occasional success immediately after the saucerization of a chronic osteomyelitis. If any large series of these cases is going to be studied to evaluate the use of associated drug, to be convincing it must be studied in conjunction with a series of controls under similar conditions without drug. In this group it should be possible to run a parallel series of controls. Incision into an abscess for the purpose of evacuating pus seldom if ever permits an immediate primary closure of the wound, because besides the freely flowing pus there is usually adherent slough, which has to separate and come away before healing can take place. Any attempt at closure is followed by a breakdown of the wound. If any drug treatment would permit such a primary closure, it would be extraordinary and therefore its value unquestionable. However, secondary closure of such wounds, after the separation of the slough, has been successfully practiced and any convincing evaluation of the role of an associated drug therapy would have to show a significantly shorter time for the interval between incision and closure or a shorter healing time.

In cases permitting early secondary closure an opportunity is given also for a comparison of the rapidity of the diminution or disappearance of the organisms involved in the infection in drug treated cases and in controls. It is probable that this should be the criterion by which to determine the safe and proper time for closure. An illustrative case follows:

A subacute infection. A young cadet on a transatlantic steamer scratched his left index finger while cleaning an engine head. An indolent infection developed, with gangrene of the skin on the radial side of the distal phalanx. It smoldered for a month, gradually spreading. Then an area of gangrene appeared on the dorsum of the first interphalangeal knuckle, exposing the tendon and joint. The infection dissolved the extensor tendon and the first interphalangeal joint. The proximal phalanx and hand became swollen red, and tender. The temperature rose to 104 F. Cultures yielded both the hemolytic streptococcus* and *Staphylococcus aureus* but no anaerobes. The patient was given penicillin generally and locally. The finger was amputated, the distal two phalanges being removed, a long anterior flap being left. Stitches were placed for delayed primary closure, which was done three days after the amputation, when the cultures showed only a few staphylococci. General penicillin being continued for ten days, the wound healed without any clinical evidence of infection.

In established surgical infections the following factors may play a role in maintaining or resolving the infection, and any appraisal of drug treatment must be made in the light of these factors. There are some differences between acute and chronic infections as indicated.

1. Diagnosis of infection, serious or trivial, and location of lesion (acute and chronic).
2. Duration of illness in hours or days (acute) or months or years (chronic).
3. Surgical procedures before admission (chronic chiefly).
4. Local and general treatment previous to admission (acute), with the dates and results of each (chronic).
5. Aerobic and anaerobic bacterial cultures of the blood (acute) and the lesion (acute and chronic).

6. Complete blood count (acute) as well as blood volume and blood chemistry (chronic).
7. Temperature studies (acute and chronic).
8. Primary and secondary local and systemic drug treatment (acute and chronic).
9. Primary surgical treatment (if any) and its relationship to the onset of infection and the beginning of drug therapy (acute and chronic).
10. Quantitative and qualitative bacterial studies of blood (acute) and lesion (acute and chronic) twice a week.

RECORDING RESULTS

In estimating the results of drug therapy in surgical cases it is obvious that we cannot use such simple terms as "recovered" or "died," because there may be clear evidence of benefit from the drug and yet death from the operation or from the disease itself. In some cases death may ensue before there is certainty with regard to benefit from the drug. The appraisal must be made from the point of view of the effect of the drug on the infectious process.

In some cases the result is immediate and surprising—one might almost apply the term "brilliant" or "excellent." In other cases the benefit is definite and reasonably certain but not particularly startling. This might be designated as "good." In many cases the benefit is decidedly questionable. One cannot say that the patient could not have done just as well without the drug; other factors seemed to be more important, the time of recovery was not materially shortened, and so on. The result here must be designated as "questionable." In still other cases it is quite evident that the infection progressed unchanged or went on to a fatal termination in spite of the drug. Here one can say with certainty that there was "no effect."

Any group of investigators working in different places on the same program should follow the same criteria as closely as possible for estimating the results. They should frequently present the data from their own cases to other investigators to check up on their own estimates. This can be done by frequent consultation between the leaders of the different groups.

One would wish to simplify this problem, but it is complicated and it is a mistake to be blind to the inherent difficulties. It is only by recognizing them that we can find a way to overcome them. And they can be overcome by wise planning and diligent effort.

SUMMARY

A. Surgical infections differ materially from medical infections in the following respects:

1. Necrosis of tissue or accumulated purulent exudate is present in surgical infections in contrast to the diffuse cellulitis of medical infections.
2. The dead tissue must be removed or evacuated or absorbed and replaced by scar tissue in surgical infections while inflamed tissue without necrosis returns to normal in medical infections.
3. There is frequently a mixture of organisms in surgical infections in contrast to a single species or virus in medical infections.
4. Necrotic tissue and thrombosed blood vessels prevent certain elements in the blood and medication from reaching the focus in surgical infections in contrast to patent and perhaps dilated blood vessels permitting the inflow of blood elements and medication into medical infections.

5. There is only local (if any) immunity in surgical infections in contrast to general immunity, which may hasten recovery, in many medical infections.

6. Necrotic tissue and pus in surgical infections may inactivate or inhibit certain medications which may be very effective in medical infections.

7. Incision usually benefits surgical infections, while it does positive harm to medical infections. Incision in surgical infections must be properly timed to do the least harm and the most good.

8. Surgical infections, being local, permit the local as well as the general use of drugs, while medical infections usually permit only their general employment. (Exceptions to this are such surface infections as erysipelas, tonsillitis or meningitis.)

B. For the foregoing reasons the evaluation of drug therapy in surgical infections is infinitely more difficult than in medical infections.

C. Drug administration in surgical infections may be prophylactic or therapeutic.

1. The prophylactic use of drugs is possible in war wounds, in contaminated accidental wounds of the soft parts, in compound fractures and burns in civilians and in operations on contaminated regions of the body, such as the alimentary canal.

2. In order to evaluate drugs properly in these cases there must be a comparison of drug treated cases with non-drug treated controls. These controls must alternate with treated cases without any selection of cases. This group presents a fixed starting point.

3. The appraisal of the therapeutic value of drugs in established surgical infections is much more difficult because there is no fixed starting point. The infection may have begun weeks, months or years before the drug treatment is started, during which time it may have had all kinds of treatment, any number of secondary contaminations, profound alterations in blood chemistry, in the nutritional status and in morale. It is difficult to run a parallel control series.

(a) In established infections the control may have to be the previous course of the case itself.

(b) However, if it can be shown that drug treatment obviates the necessity for surgery or makes possible a more conservative procedure or shortens the healing time or permits primary closure or early secondary closure which would not have been possible without the drug, its value may be demonstrated.

D. All these facts indicate the difficulty of evaluating drugs in the treatment of surgical infections. A carefully laid out plan should be followed and a number of different investigators in different cities should study the problem in a uniform manner, comparing and pooling their results.

E. Results of drug therapy in surgical infections may be designated by the terms (a) brilliant, (b) good, (c) questionable and (d) with no effect.

F. In the prophylactic studies, and in established infections when controls are used, the results in treated cases must be significantly better statistically than the controls before the benefit can be certainly attributed to drug treatment. When controls are not used the results must be repeatedly and consistently "brilliant" or "good" in a large series of cases before the benefit of drug treatment can be considered clearly proved.

THE GUILLOTINE AMPUTATION

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Drainage of infected or potentially infected tissues has always been a fundamentally sound surgical principle. Deviations from this basic principle, although occasionally resulting in a sensationally short period of convalescence, most often prolong recovery, endanger survival or result in death. The occasional success of a procedure which is a violation of sound principle does not justify the procedure in surgery any more than does the prosperity of one undetected criminal justify crime.

The guillotine or open amputation is an operation based on the sound surgical principle of drainage for infection. The efficacy of the guillotine amputation as a life saving measure and a "length preserving" operation was definitely established in the World War of 1914-1918. So lethal were the consequences of primary closure of battle wounds that it was necessary for the Surgeon General of the American Expeditionary Forces to issue an order prohibiting the closure by primary suture of any battle wound.

Experience to date in World War II indicates that the sulfonamide drugs have not altered the basic surgical principle of "drainage for infection." Closed amputations of extremities traumatized beyond repair is dangerous to life and wasteful of useful functional bone length even though the sulfonamides are used systemically and topically. This does not mean that these valuable drugs should be discarded. On the contrary, the sulfonamides should be employed routinely along

Colonel MacFarlane,¹ the consulting surgeon to the Canadian Overseas Force, in commenting on the results of chemotherapy in the African campaign of 1941 emphasized the necessity for drainage in traumatic wounds. He stated that despite the liberal use of the sulfonamides the battle casualties from this campaign



Fig. 2.—Appearance of (A) stump six weeks after guillotine amputation: bone ends clean, soft tissue healed over end of bone; (B) final result, three months after injury: a reamputation has been performed at site of election eight weeks after guillotine amputation.

invariably were severely infected when closure of wounds was carried out. He also stated that patients whose wounds were left open and permitted to drain and heal by granulation recovered more quickly and with fewer fatalities.

The same may be said of our own casualties returned to this country. In one group of 150 amputees, which included patients from all theaters of operation as well as the zone of the interior, the following facts were evident: 1. The systemic status of the patients whose amputated extremities had been left open was universally excellent. 2. The only patients showing the exhaustion of prolonged infection were those in whom the development of infection made imperative the opening of a previously sutured stump. 3. The guillotined extremities all presented a good granulating surface, which was easily and in a short time prepared for closure. 4. The only severely infected stumps were those in which closure was attempted and failed. Their preparation for ultimate closure took longer than the preparation of those extremities which had been left open to granulate. 5. In no instance was the closure of a properly managed guillotine stump complicated by severe infection, nor did it require lavish sacrifice of length.

The guillotine amputation is definitely indicated for any extremity which requires removal when infection is already established or in which the probabilities of contamination make the chances for primary healing questionable. Thus it is the operation of election for an extremity which must be removed because of a severe joint infection or an infected compound fracture or for a severely traumatized extremity in which amputation becomes necessary because of injury to the



Fig. 1.—Anteroposterior and lateral views of severely infected shotgun fracture of ankle, with gangrene of foot.

with sound surgery. Critical observation of penicillin indicates that more should not be expected from its use. If the basic principles of sound surgery are ignored, penicillin therapy cannot be expected to be effective.

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1. MacFarlane, J. A.: Wounds in Modern War, *J. Bone & Joint Surg.* 24:739 (Oct.) 1942.

circulation or soft tissues. The guillotine operation is also to be chosen when operating conditions are not adequate. The patient recovering from severe shock will tolerate a guillotine amputation, as it can be performed much more rapidly than a closed amputation and with less additional shock.

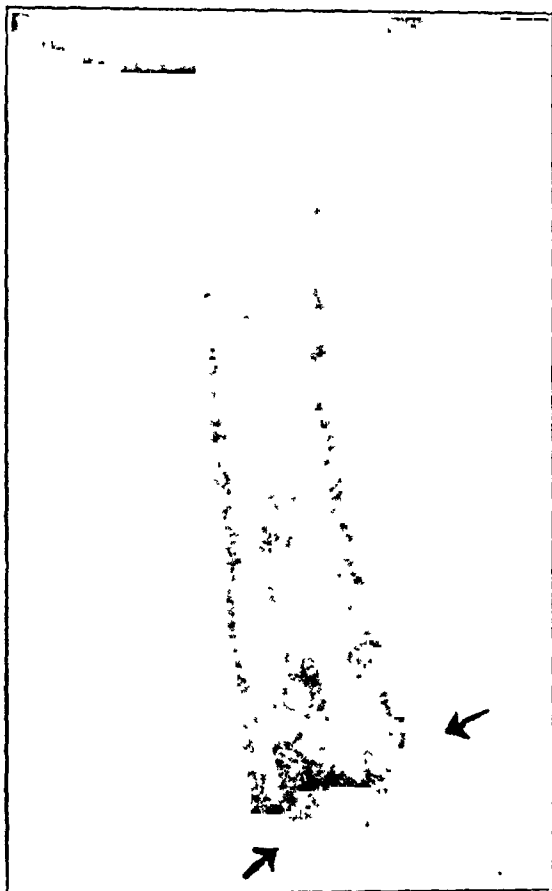


Fig. 3.—Guillotine stump four months after amputation, showing sequestrum and infected osteophytes due to improper handling of periosteum at operation

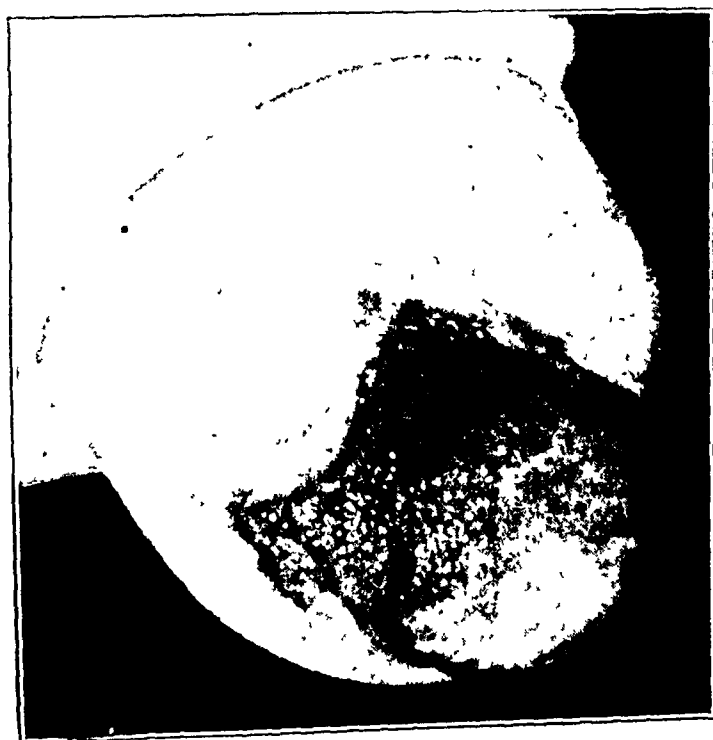


Fig. 4.—Thigh stump without traction four weeks after operation skin receded from bone end

The guillotine amputation is a two stage procedure. The first stage is the removal of the damaged portion of the extremity. After the open cross section resulting from this stage has healed by granulation and scar

contracture, the second stage consists in the operative procedure to produce the final stump for a prosthesis. This may be a simple plastic closure or it may be a reamputation at the site of election.

The technic of the first stage or of the actual removal of the undesirable portion of the extremity is aimed at producing a slightly concave open cross section of the extremity, with the skin slightly longer than the superficial muscle, the deep muscle slightly shorter than its overlying muscle. A circular incision is made through the skin at the lowest level compatible with viable tissue, and the skin is allowed to retract; the fascia is then incised in a circular manner at the level to which the skin has retracted. The superficial layer of muscle is then cut at the end of the fascia and permitted to retract. At its point of retraction the deep layers of muscle are cut through to the bone. After the deep muscles have retracted, the periosteum of the bone is cleanly incised and the bone sawed through flush with the muscles



Fig. 5.—Below knee stump two months after operation, no traction used skin receding and bone protruding.

The bone end is not treated by the aperiosteal technic. No cuff of periosteum is removed as in a closed amputation. Bone denuded of periosteum will sequestrate in the presence of infection, and the removal of a cuff of periosteum will result in a ring sequestrum. Clean sharp incision of the periosteum is important. Bone left uncovered in the stump by elevated tags of periosteum due to rough handling will also sequestrate, and the shreds of periosteum in the muscle will cause infected osteophytes which delay healing.

Large vessels are transfixed and smaller vessels tied with plain catgut. The nerves are cut short and allowed to retract into fascial planes. The larger nerves are ligated with plain gut just proximal to the point of section to guard against bleeding from their artery. The entire cross section of the extremity is left open.

For a compound fracture or for an infected fracture, the site of amputation is at the site of fracture. The incision does not always have to be transverse to the long axis of the leg but may be altered to meet circumstances. If necessary to preserve length, the incision may be at a diagonal to the long axis of the leg or racket shaped. For example, to perform the guillotine amputation for an infected compound fracture just

above the ankle joint and an osteomyelitis extending through the entire shaft of the fibula with draining sinuses, a circular incision could be made just above the ankle and extended longitudinally up the lateral side of the leg to permit removal of the entire fibula and drainage of the infected tissue. This would save a below the knee stump with a functioning knee joint. Any attempt to perform a closed amputation in these circumstances would demand a midhigh amputation with greatly increased disability.

For no surgical procedure is the proper postoperative care more important than for the first stage of the guillotine amputation. Skin traction is absolutely essential after the operation. It must be applied immediately and kept up continuously. This in no way interferes with dressing the infected wound. The traction can be released for dressings. When traction is applied immediately after operation the potentialities of the concave

gins and when bacteriologic studies show a low bacterial count, particularly of streptococci, the tissues will tolerate a surgical closure. These conditions can usually be brought about by careful postoperative care in six to eight weeks following the first operation. Prior to performing the operation for closure, roentgenograms of

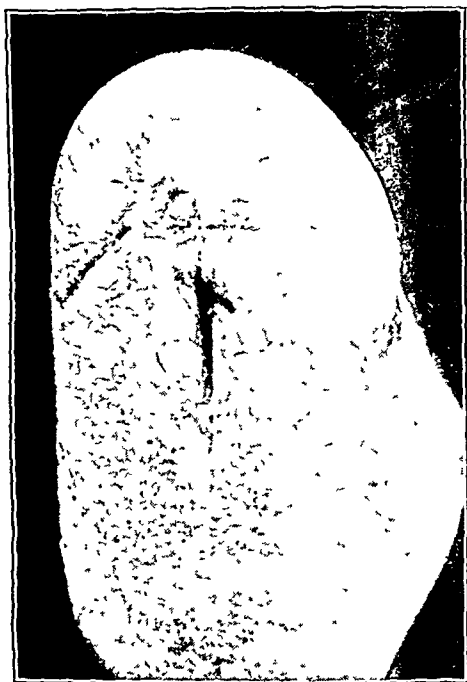


Fig. 6.—High stump six weeks after operation. Skin traction continuously since guillotine amputation. Skin healed by scar. Bone covered. Ready for simple plastic closure.

cross section of the extremity are fully developed. The skin, owing to its elasticity, is gradually pulled down over the muscles, the end of the bone becomes covered by granulation tissue and the skin margin closed by scar contracture.

If skin traction is not continuously applied, the concave cross section of the leg becomes a greatly exaggerated convex cross section, with an inch or two of uncovered bone protruding and a large collar of granulation tissue intervening between the constantly receding skin margin and the bare bone. Such a neglected stump requires a reamputation at a higher site, with unvaried sacrifice of ultimate length.

The second phase in preparing the open amputation for use of a prosthesis consists in an operative procedure to cover the end of the bone with healthy pliable skin, which has good circulation and normal sensation. This closure is usually a simple matter. When there is an area of clean granulation tissue covering the bone end, when there is no redness or edema of the skin mat-

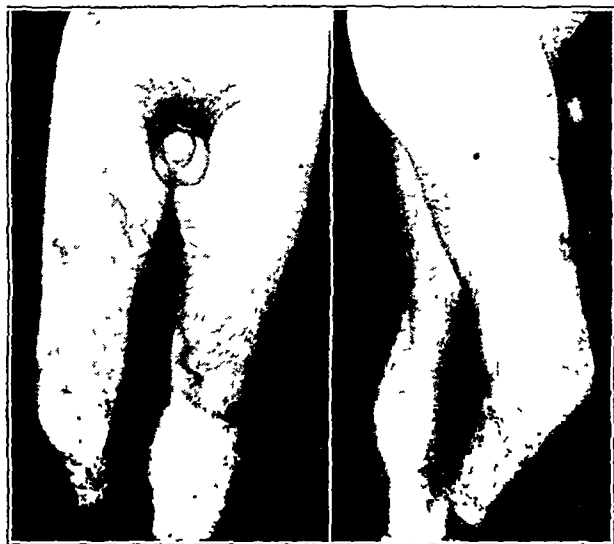


Fig. 7.—Below knee stump eighteen months after pedicle skin graft. Ulcer throughout graft. Patient has never been able to use prosthesis.

the bone end should be obtained to determine whether sequestration of bone is occurring. If a sequestrum is forming, closure should be delayed and the sequestrum removed at the proper time.

Closure is usually a simple procedure. The scar is excised *en bloc* to good skin, the skin undermined to mobilize it and sutured over the end of the bone. If the scar is so firmly attached to the bone that cutting it loose would leave a projecting piece of bone under the

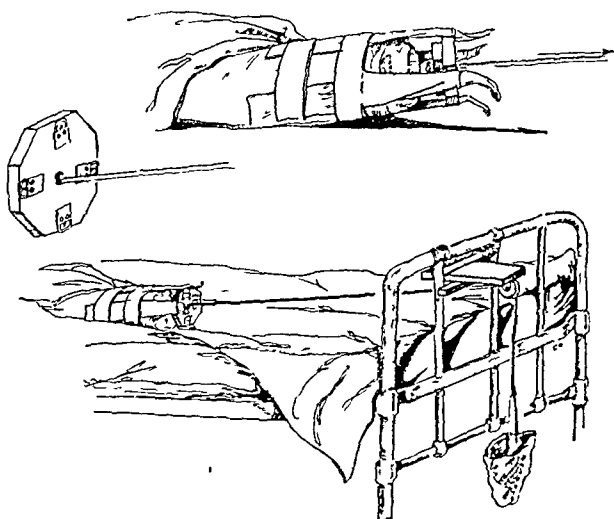


Fig. 8.—Diagram of method of applying traction to open stump (from "Amputations," by N. T. Kirk).

closed skin, a thin section of bone may be removed *en masse* with the scar, by sawing a piece $\frac{1}{8}$ to $\frac{1}{4}$ inch in length from the end of the bone. It is not necessary to free the muscles and fascia from the bone and resuture them over the end. They are already firmly attached and will carry out their function well. The

great longitudinal elasticity of the skin makes possible a definite gain in length of the flaps. Occasionally a plastic section of the skin has to be done after mobilizing it thoroughly to cover the stump end. This can be done without danger of losing skin if the mobilized flap is given a broad enough base for blood supply. Skin traction may also be used advantageously after the plastic closure and be employed until healing results if there is any evidence of tension. This technic enables closure to be effected without additional sacrifice of length when there is no abundance of stump.

Skin grafts, even of the pedicle type, are of little value in effecting closure of the open amputation stump. Because of the avascularity of the stump end, the pedicle is usually lost. If successfully attached, the imperfect sensation and small vascular margin of safety of the flap will not tolerate the trauma of wearing a prosthesis. The pedicle blisters and ulcerates under the pressure of the artificial limb bucket. Repeated invalidism and ultimate reamputation at the request of the amputee is the final outcome. Rarely a pedicle graft may be necessary to save enough of the forearm stump and avoid sacrificing the elbow. The wear and tear of an arm prosthesis is much less than that of a weight bearing artificial limb. Occasionally a split skin graft may be

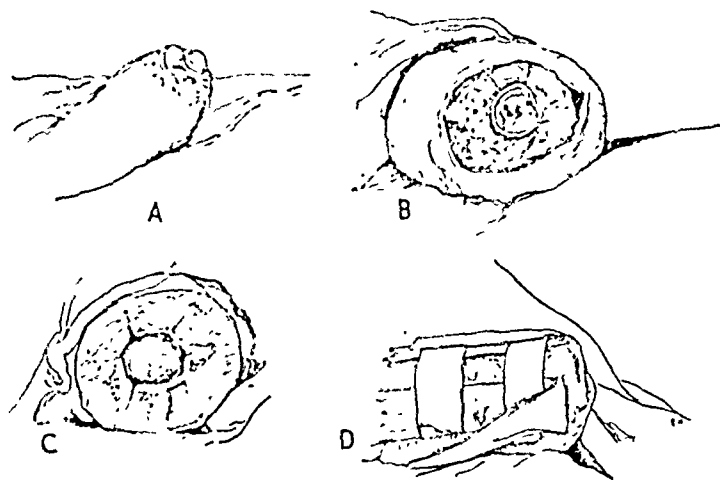


Fig. 2.—Results of traction: A, B, stump on admission; C, sixteen days with traction; D, traction straps turned back; skin approaching end of bone (from "Amputations," by N. T. Kirk).

used to cover a large granulating surface in order to accelerate healing prior to ultimate closure. This should not be necessary if traction is properly used in the post-operative period.

If there is an abundance of stump, a reamputation at the site of optimum function with primary closure can be carried out without danger of realighting infection. For example, if the stump is above the ankle the reamputation can be carried out at the site of election in the middle third of the leg, or if a portion of the foot remains a Symes amputation can be performed and closed by primary suture.

The sulfonamides have a definite place in secondary closures and should be used both systemically and locally. Since there is no sloughing muscle or open fascial planes when the secondary closure is carried out, they have less unfavorable factors to overcome and are more effective. Their use permits earlier closure under these circumstances than was possible prior to their advent.

SUMMARY

1. Closed amputations are dangerous to life and wasteful of stump length in the presence of established infection or potentially infected extremities.

2. The local and systemic use of sulfonamide drugs has not obviated the dangers from closed amputations in the presence of infections.

3. The open or guillotine amputation is definitely indicated if the possibility of infection is present. Its use in the presence of infection will save life and also useful stump length.

4. The proper after-care of the guillotine amputation is an essential for good results. Continuous skin traction from the time of amputation is imperative if good results are to be obtained. Otherwise, reamputations with resultant loss of bone length will occur.

PAIN AFTER AMPUTATION AND ITS TREATMENT

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In this discussion of intractable pain which may follow amputation I should like to begin by pointing out how little is known about it, and what an opportunity is awaiting surgeons in the military forces today for gaining a better insight into its mechanism, as well as for devising effective methods of treatment. With the promising start made by Mitchell, Morehouse and Keen¹ in the investigation of painful nerve injuries during the Civil War, it is surprising how little progress was made by our immediate predecessors from 1914 to 1918. Perhaps this was due to the fact that the best neurosurgical minds, like the late Dr. Cushing's, were taken up with the problems of cerebral trauma, and that therefore lesions of peripheral nerves, which cause intense pain, were neglected. With the present broadening of neurosurgical interest to include the sympathetic nervous system and the problems of intractable pain, we should do better. Painful amputation stumps are likely to be the most common of these distressing conditions and are certain to be a major reconstruction problem for years to come.

MECHANISM OF PAIN

Neuromas.—Microscopic examination of an end bulb neuroma shows it to be a branching mass of Schwann cells and proliferating axones embedded in scar tissue. This would seem to be an ideal setup for the production of pain, and it is remarkable that the great majority of neuromas are not painful. Trotter,² in his classic essay on "The Insulation of the Nervous System," pointed out that "the general tendency of all forms of sensation yielded by a regenerating nerve to develop a certain resemblance to pain reminds us that regenerating fibers resemble pain fibers in a lack of insulation. It is probable, therefore, that imperfect insulation tends to render all fibers less sensitive than normal,

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Lieut. Col. R. Glen Spurling and Major Frank H. Mayfield of the Army Medical Corps, Capt. W. McK. Craig of the Navy Medical Corps and Dr. Mandel Cohen of the Psychiatric Service of the Massachusetts General Hospital assisted in the preparation of this article.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the United States Navy. The opinions and views set forth are those of the writer and are not to be construed as reflecting the policies of the Navy Department.

1. Mitchell, S. W.; Morehouse, G. R., and Keen, W. W.: *Gunshot Wounds and Other Injuries of Nerves*, Philadelphia, J. B. Lippincott Company, 1864.

2. Trotter, Wilfred: *The Collected Papers of*, London, Oxford University Press, 1941.

but more apt when effectually stimulated to respond in an exaggerated explosive way." In a neuroma the naked nerve endings are totally devoid of any insulating myelin. Furthermore, scar tissue in an amputation stump in which these end bulbs are embedded contracts and also reduces the supply of circulating blood. This is particularly true when there has been infection and delayed healing. In recent experiments Lorente de No³ has shown that a nerve made anoxic fires off repetitive stimuli, which suggests that impaired circulation in a neuroma may be a source of painful impulses.

Why most neuromas should be painless and others the cause of long lasting torture is quite unknown. This cannot be explained entirely on the basis of any idiosyncrasy on the part of the individual patient (such as a low threshold for pain), because in certain individuals with multiple amputations only a single stump will become painful (Livingston⁴). Why is removing the pain-producing neuroma so seldom successful? A new neuroma will form, but sometimes the pain recurs sooner than its peculiar end bulb can be reproduced. This and the fact that more proximal crushing or chemical destruction by infiltrating the nerve trunk with alcohol fails to give relief has forced investigators to predicate a central extension of the pain mechanism. Mitchell, Morehouse and Keen¹ described an ascending neuritis, but numerous examinations of sections of nerves removed during therapeutic neurectomies have failed to show evidence of any histologic alteration. It is therefore far more likely that the central disturbance is due to reflex changes in the spinal or cortical levels, as has been suggested by Livingston⁴ and Riddoch.⁵

The Phenomenon of the Phantom Limb.—After amputation most persons are conscious of their absent member. This may be for only a brief period after amputation, and the sensation may not be painful. Usually it disappears when the patient first starts to use his artificial limb. On the other hand, the sensations may become acute torture, so that the victim complains that his fingers are being compressed into the palm of his hand, or that his toes feel as though they were being constricted in a vise. He may even state that a specific pain from which he suffered before amputation persists unchanged in the missing part. Riddoch comments on the fact that "the prevailing posture of the phantom is that of the part at the time of amputation. It is as if the postural model had become frozen when normal stimulation ceased." These sensations are always located in the periphery of the limb, especially in the fingers or toes, where there is the greatest concentration of sensory nerve endings. The missing hand or foot is sometimes felt in its normal position, but at other times it may shift centrally, so that in the case of a total arm amputation the phantom hand may be felt at the elbow or disappear into the shoulder stump. These are the reasons why the phantom phenomenon has been regarded as psychogenic and the patient regarded with suspicion as a psychoneurotic. As Leriche⁶ and Livingston¹ have stated, such a diagnosis is frequently incorrect and may therefore prevent adequate therapy.

Probably the primary cause of the phantom sensation is irritation within a neuroma of centrally conducting axones which formerly supplied the missing part. But this does not necessarily continue to be the case, in view of the other peculiar characteristics of the phenomenon mentioned and the fact that these may persist after all the known afferent connections have been severed. Riddoch⁵ has given a most convincing argument for believing that the phantom sensation is a projection arising from the postcentral sensory association areas in the cerebral cortex. According to him:

Stimulation by the processes of healing of the proximal ends of the divided nerves evokes sensations which are projected and interpreted as if the limb were still present. As has been said, they are never quite normal. These paraesthesiae, through simultaneous excitation of the schema underlying tactile localization and shape, are projected and animate the surface or outline model of the absent part. Similarly, irritation of fibers concerned with postural sensibility give rise to impulses which help to keep alive the postural model, so that the phantom is correctly placed and moves with the stump. These sensations, in the absence of pain, are, however, weak, so that, as a rule, only the peripheral segments, the hand or foot, which are most richly endowed with sensory end-organs and fibers, are represented in the phantom. Retention of the phantom is in part due to the abnormal qualities of the tactile and other sensations, in spite of their relative weakness and the antagonistic evidence from visual and other senses. During the stabilizing process of healing of the divided nerves, sensory impulses diminish, and sensations become correspondingly fainter, with the dual result that the phantom is increasingly less obvious in outline and projection of it is defective. In consequence, it gradually approaches the stump, into which it finally disappears and fades away. A new shape of the body is now accepted. In other words, there is no longer a conflict in evidence from the patient's senses. If, however, the phantom is painful, which is usually the result of grossly abnormal conditions in the stump, the phantom may persist indefinitely and retain its original position. Further, the hand and fingers are not only much more obtrusive and clearly defined, but more of the amputated part is represented by it. Voluntary movement is restricted or impossible because of aggravation of pain. When, however, pain in the phantom is successfully abolished by lateral chordotomy or early removal of abnormalities in the stump, the phantom may behave as if it had been painless from the first.

If this concept is correct, the development of a central projection would be expected to take time to become established in the sensory cortex, a point which has been mentioned by Riddoch and recently emphasized by Air Commodore C. P. Symonds.⁷

General Considerations.—Hilton⁸ considered pain in the nature of a protective mechanism, but in the amputation stump neuralgias it becomes a destructive mechanism, dangerous to the patient's morale. When pain of this type is allowed to become chronic, the cerebral cortex may become involved in its projection (Riddoch), and in addition the patient usually develops an addiction for morphine. These complications force us to define the ideal time for surgical intervention. Occasionally the pain subsides spontaneously, but more often than not it continues to get worse. I have recently operated on a patient suffering from a phantom foot of eighteen years' duration. A waiting period of over six months in any but the most stable individuals is dangerous because the psychic changes may become irreparable. We are therefore forced to formulate a rational plan of treatment for these patients.

3. Lorente de No, R.: Personal communication to the author.
4. Livingston, W. K.: *Pain Mechanisms. A Physiologic Interpretation of Causalgia and Its Related States*, New York, Macmillan Company, 1943.
5. Riddoch, G.: *Phantom Limbs and Body Shape*, *Brain* 64: 197-222 (Dec.) 1941.
6. Leriche, R.: *La chirurgie de la douleur*, Paris, Masson & Cie, 1937.

7. Symonds, C. P.: Personal communication to the author.
8. Hilton, J.: *Rest and Pain*, ed. 5, London, Bell & Sons, 1892.

With this purpose in mind I should like to begin at the point where all conservative orthopedic, physical therapeutic and neuropsychiatric procedures have been thoroughly tried and have failed.

SURGICAL TREATMENT

In undertaking this type of surgery, principle No. 1 should be to guard these patients against useless and mutilating operations. While working in France in 1927 I remember seeing a French veteran whose case illustrates many of the difficulties in the treatment of post-traumatic pain. A penetrating wound of the hand had led to chronic suppuration, fibrosis and pain. In the intervening ten years he had undergone a long series of operations including amputation above the wrist, resection of painful neuromas and subsequently progressive amputations up the arm which ended with a painful shoulder stump. Periarterial sympathectomy of the subclavian artery and section of the posterior roots of the brachial plexus failed to put an end to his suffering, which was finally terminated through suicide by hanging. At that time little was known about what to do and, equally important, what not to do about a case of this sort, as this tragic story shows. We are learning slowly, and many points are illustrated by this story. In the first place, it is vitally important not to undertake any ineffective procedures. Col. F. M. McKeever⁹ has observed that the pain in an amputation stump is usually increased by any operative procedure, even by revision of flaps, where the severed stumps of the major nerves are not even exposed. It is therefore of vital importance to recognize that certain procedures are useless and should never be employed. At a meeting of military neurosurgeons convened by Lieut. Col. R. G. Spurling at the Walter Reed General Hospital in September of last year it was agreed that the list of nonbeneficial and actually harmful procedures should include the following:

1. *Repeated resections of neuromas.*
2. *Neurectomies or interruption of nerve trunks at higher levels.* Livingston¹ has recorded a resection of the brachial plexus in a painful upper arm stump without benefit, and numerous other case reports from the time of Mitchell, Morehouse and Keen¹ are on record which attest its futility. Another variation of this procedure is the transection of a painful nerve trunk with immediate suture to prevent neuroma formation. Leriche⁶ describes its use, but without striking results.

3. *Reamputation for the relief of pain.* Reamputation, as emphasized by Leriche⁶ and Riddoch,⁵ must never be considered, as the pain nearly always recurs in the new stump and usually is made a great deal worse. There is only one exception to this rule: When the stump is badly constructed and a liability on mechanical grounds, a reconstruction may be in order. Such a revision must be done at an early date, however, if it is to have any chance of relieving pain.

4. *Periarterial sympathectomy.* Successful results in minor forms of amputation stump pain by this operation have been recorded by Leriche⁶ and Homans.¹⁰ Leriche, however, states that it should not be considered when the neuralgia is severe. It is my personal feeling that the procedure is nonspecific and that its

effects are due to the transitory rise in peripheral circulation that results from the increased elimination of heat following any injury to the tissues. Similar effects can be produced more simply by procaine block of the vasoconstrictor nerves or by fever therapy. In this connection it is of particular interest to record the observation made by Major F. H. Mayfield and Capt. J. W. Devine at the Percy Jones General Hospital that soldiers with malaria are relieved of pain from nerve injuries during bouts of fever.

5. *Intrathecal injection of alcohol.* This procedure, proposed by Dogliotti,¹¹ has been advocated for the relief of painful amputation stumps in the lower extremity. I have seen it work successfully only once out of seven trials. Furthermore, it carries as great a risk of paralyzing the bladder as section of the spinothalamic tract, or even greater. For any patient who has chronic pain and is even a fair surgical risk I should prefer to cut the pain tracts in the spinal cord.

6. *Posterior rhizotomy.* Sectioning the posterior roots of the brachial plexus is a dangerous and mutilating procedure. The widespread and complete anesthesia which results is both annoying and incapacitating to the patient, if he has a useful stump. For this reason, and even more because the anesthetic stump usually continues to be painful, this procedure should never be undertaken. I have seen a man with a painful amputation stump at the shoulder continue to suffer after division of all the posterior spinal roots from the third cervical down through the third thoracic. Riddoch⁵ also emphasizes the futility of posterior rhizotomy in these cases and states that he has seen the pain continue after the anterior as well as posterior roots of the brachial plexus have been cut.

Procedures which may be successful include the following:

1. *Single resection of a painful neuroma.* Leriche⁶ and also Bailey and Moersch¹² claim that this operation never produces lasting results, as the neuroma invariably recurs. Riddoch,⁵ however, in his article on amputation stump pain is less pessimistic. My personal experience leads me to concur with Riddoch that the removal of a palpable painful neuroma is worth a single trial, provided the pain disappears when the neuroma is infiltrated with procaine. It is a minor procedure and is occasionally successful, particularly if performed very early, before the development of a local functional disturbance in the sensory cortex. In excising the neuroma it is well to use the technic suggested by Boldrey¹³ and adopted by Lieutenant Colonel Spurling at the Walter Reed General Hospital of burying the end of the nerve in a drill hole made through a neighboring bone, so that the formation of a fresh neuroma will be prevented by the constricting action of newly formed periosteal bone. Both Spurling and I have used this procedure a number of times in the treatment of neuromas from penetrating war wounds, and the results to date have been promising.

2. *Sympathectomy.* When local measures are unsuccessful, the possibilities of treatment by chemical blocking of the sympathetic fibers to the extremity or by

11. Dogliotti, A. M.: Traitement des syndromes douloureux de la périphérie par l'alcoolisation sub-arachnoïdienne des racines postérieures à leur émergence de la moelle épinière, *Presse méd.* **39**: 1249-1252 (Aug. 22) 1931.

12. Bailey, A. A., and Moersch, F. P.: Phantom Limb, *Canad. M. A. J.* **45**: 37-42 (July) 1941.

13. Boldrey, E. Edwin: Amputation Neuroma in Nerves Implanted in Bone, *Ann. Surg.* **118**: 1052-1057 (Dec.) 1943.

9. McKeever, F. M.: Paper given at meeting of American Academy of Neurological Surgery, Sept. 18, 1943, at Battle Creek, Mich.

10. Homans, J.: Minor Causalgia: A Hyperesthetic Neurovascular Syndrome, *New England J. Med.* **222**: 870-874 (May 23) 1940.

ganglionectomy should always be considered. These are the only minor and nonmutilating procedures that offer any likely chance of success. It should be emphasized that there is no convincing evidence that the peripheral sympathetic axones carry any sensory impulses or that somatic sensory fibers run in these trunks to the peripheral blood vessels. Nevertheless, sympathetic block has resulted in a large number of dramatic cures, both of local stump and also of phantom limb pain. It has been my impression that sympathetic paralysis is most likely to benefit patients whose pain is felt in the distal end of an extremity, and particularly when that extremity is habitually cold, cyanotic and clammy. Individuals with chronic vasospasm usually have an emotionally labile disposition and seem to develop unusual complaints after injury, which can

the injection should be repeated. Leriche and Homans in particular have found that in the course of a series of injections the pain may be relieved for increasing intervals, until finally it does not recur. If the improvement is only temporary, repeated blocks are not likely to be helpful; but the chances of lasting relief following permanent vasodilatation by ganglionectomy are great.¹⁶ On the other hand, when diagnostic injection of procaine produces clearcut vasodilatation and anhidrosis but does not influence the pain, treatment by sympathectomy need be given no further consideration.

When this relatively innocuous type of surgery cannot be used, the attack must be shifted to the central nervous system. Before recourse to more radical intervention on the spinal cord or brain, all aspects of the problem should be reviewed with a competent neurolo-

TABLE 1.—*Relief of Local Pain After Amputation by Interruption of Sympathetic Fibers*

Case	Condition	Surgical Procedure	Relief
1 Roger P.	Crush of index finger and amputation associated with cold, clammy hand; pain in hand radiating up inner arm to pectoral region	1. Reamputation of finger 2. Paravertebral procaine block T ₁ T ₂ 3. Cervicothoracic ganglionectomy	None 2 hours Slight recurrence of pain 1 year after operation, on partial recovery of vasoconstriction and sweating
2 Roland L.	Traumatic amputation of index finger associated with cold, sweaty hand	1. Reamputation 2. Paravertebral procaine block T ₁ T ₂ 3. Cervicothoracic ganglionectomy	None Transitory Permanent
3 James B.	Burning pain developing in stump 6 years after thigh amputation pain present 3½ years	1. Section spinothalamic tract with sensory level at T ₁₂ * 2. Paravertebral lumbar procaine block 3. Paravertebral lumbar procaine block 4. Paravertebral lumbar procaine block	Relief for 4½ months with recurrence following transurethral prostatectomy Relief for 2 days Relief for 4 weeks Relief at discharge

* Level of analgesia not high enough.

TABLE 2.—*Relief of Local Pain After Amputation by Section of Spinothalamic Tract*

Case	Condition	Level of Analgesia	Relief
4 William D.	Gritti-Stokes amputation for thromboangitis obliterans, then complained of deep aching pain in stump, 3½ years' duration	9th thoracic segment	To death, 5½ years later; this patient subsequently developed pain in stump of other leg after a second Gritti-Stokes amputation and painful gangrene of fingers; died after cervical chordotomy on opposite side
5 Nellie T.	Burning pain in stump since thigh amputation for osteomyelitis 8 years before; at other hospitals had had unsuccessful sciatic neurectomy, multiple excisions of neuromas and intrathecal alcohol injection, latter caused bladder disturbances for 1 year	8th thoracic segment	Complete relief at 3 months
6 Luana H.	Midthigh amputation following septic abortion; local pain in stump of 2 years' duration; previous intrathecal alcohol injections had paralyzed bladder without mitigating the pain	10th thoracic segment	Complete relief for over 5 years but has complained of radicular pain at level of laminectomy

often be corrected by restoring a normal circulation. The most valuable reports on this method of treating pain in amputation stumps and causalgia have been published by Leriche,⁶ Livingston,⁴ Homans¹⁰ and de Takáts.¹¹ Two other successful cases of relief of intractable pain after traumatic amputation and also a review of the technic of ganglionic injection and resection have been described by White and Smithwick.¹ Cases treated at the Massachusetts General Hospital by injection of procaine and by sympathectomy are summarized in table 1. It is always best to begin with a diagnostic blocking of the paravertebral ganglions with procaine. This is a simple test, and occasionally a single injection will give enduring results. When freedom from pain lasts a number of hours or days,

gist and a neuropsychiatrist. It must be constantly borne in mind that any ineffectual and mutilating procedure, by adding another psychic trauma, will inevitably increase the patient's suffering and loss of morale.

3. *Section of spinothalamic tract (chordotomy).* Cutting the anterolateral pathway by which the sensation of pain ascends within the spinal cord is in general far more effective than section of posterior spinal roots. Furthermore, it is not followed by numbness or loss of position sense, as all components of sensation except appreciation of pain and temperature are spared. From my personal experience I feel certain that tenderness and burning pain which are localized in the stump itself can be relieved by chordotomy. Three typical cases treated in this fashion are summarized in table 2.

14 Scupham, G. W.; de Takáts, Géza; Van Dellen, T. R., and Jesser, I. H.: *Vascular Diseases*. Seventh Annual Review, Arch. Int. Med. 68: 599-660 (Sept.) 1941.

15 White, J. C., and Smithwick, R. H.: *The Autonomic Nervous System, Anatomy, Physiology and Surgical Application*, ed. 2, New York: Wm. B. Saunders Company, 1941.

16 In good risk surgical cases operative resection is always to be preferred to attempts at destruction of these structures by paravertebral injection of alcohol. Even in the most expert hands chemical block is not always effective, and complications are more frequent than in resection under direct vision.

In the case of severe pain and other peculiar sensations from a phantom limb, the decision as to whether relief can be obtained by spinothalamic tractotomy becomes most difficult. In the extensive experience of Bailey and Moersch¹² at the Mayo Clinic this operation has failed consistently. Riddoch,⁵ however, does not believe that this is necessarily the case; but when pain has been present for a protracted period so that it has been stamped indelibly on the cerebral cortex, no spinal interruption can be counted on to free the patient from the consciousness of his phantom. In the Neurosurgical Service at the Massachusetts General Hospital 3 patients complaining of pain referred to the missing leg have been submitted to spinothalamic tractotomy (table 3). It will be seen that the severe crushing or pinching pains in the phantom foot have been relieved in each instance. In the first patient, whose phantom sensations had been present for eighteen years, it is remarkable that relief from pain should have been so complete. He writes: "No sensation to speak of in the missing leg, but some throbbing at times in the little toe and ankle bone. No movement of the foot or toes. The operation has also eliminated the spasmodic jumping of the stump to almost 100 per cent." The second patient has had a sense of stiffness in his

tion occurs in the parts which have the greatest concentration of sensory nerve endings and therefore the greatest representation in the cerebral cortex. The cortical area for the hand is many times greater than the corresponding area for the foot.

In our present state of limited knowledge it is wisest to accept the fact that even a perfectly executed chordotomy, which is known to interrupt all forms of peripheral pain, can be counted on to give relief only when the disagreeable sensations are clearly confined to the amputated stump. Surgical intervention could be undertaken much more freely if objective tests could be devised for differentiating peripheral from central pain. It is possible that pain originating in an amputation stump can be identified by diagnostic blocking of its nerves with procaine. To date this method has not been explored, but if a sufferer from pain in a phantom leg should continue to complain after spinal anesthesia, or a phantom arm should still be present after an effective block of the brachial plexus, then it would seem most likely that the sensation is projected from the cerebral cortex.²¹

4. *Resection of sensory cortex.* In certain sufferers from major amputation stump neuralgia we shall be

TABLE 3.—*Relief of Phantom Limb Pain After Amputation by Section of Spinothalamic Tracts*

Case	Condition	Level of Anesthesia	Relief
7. Charles W.	Pain in phantom foot for 18 years following thigh amputation; 2 previous unsuccessful resections of neuromas	Not recorded	At 2½ years patient remains comfortable, although at times there is slight throbbing sensation in phantom little toe; spasmodic jumping of stump has ceased
8. Arthur N.	Crushing pain in phantom ankle following hip disarticulation for sarcoma 2 months previously	7th thoracic segment	In good condition and free from pain at 27 months, but has had awareness of phantom with some sense of stiffness in foot and big toe
9. Homer A.	Pinching, burning pain in phantom foot 7 months after hip disarticulation	9th thoracic segment	Complete loss of phantom sensations 8 months after chordotomy; still complains of spasmodic jerking of stump with sense of muscle cramp and of mild radiculitis at level of laminectomy incision

phantom ankle and big toe, but no pain. The third states that he has lost all sense of his phantom, but that when the muscles of his stump contract he is still aware of the cramplike contractions. This is not a sufficiently large series from which to draw definite conclusions, but it does prove that chordotomy can help in certain cases.

So far I have had no opportunity to attempt a high section of the spinothalamic tract for phantom pain in the arm and have been unable to find any successful report of its accomplishment. Yet chordotomy in the upper cervical segments or a tractotomy at the medullary (Schwartz and O'Leary;¹⁷ White¹⁸) or mesencephalic (Dogliotti;¹⁹ Walker²⁰) levels of the brain stem should interrupt the ascending painful impulses from the upper extremity. However, if the pain is a psychic projection from the cortex, no benefit can ensue. On theoretical grounds this mechanism is more likely to be present after amputations of the arm than the leg. It has been pointed out that phantom sensa-

forced to decide whether, in the presence of phantom sensations with evidence of psychic projection of the painful manifestations, we are justified in taking Riddoch's⁵ and Leriche's⁶ still earlier suggestion and extirpating the postcentral convolution of the cerebral cortex. Riddoch believes that the phenomena of the phantom limb, such as the persistence in the phantom of pain and postural sensations which antedate the amputation, can be explained only on the basis of cortical representation. He has stated that "destruction of the cortical sensory receptive mechanism in the parietal lobe, which is concerned with the development of postural and surface models and with recognition of change, causes immediate abolition of the phantom limb." This theory is corroborated by the case reported by Head and Holmes,²² in which disappearance of a postamputation phantom foot followed a lesion of the opposite parietal cortex. Mahoney²³ has recently put this theory to the test and carried out resection of the postcentral sensory cortex in a patient with a very disagreeable phantom arm. After two years the result remains a striking success. With lesions which involve

17. Schwartz, H. G., and O'Leary, J. L.: Section of the Spinothalamic Tract in the Medulla with Observations on the Pathway for Pain, *Surgery* 9: 183-193 (Feb.) 1941.

18. White, J. C.: Spinothalamic Tractotomy in the Medulla Oblongata: An Operation for the Relief of Intractable Neuralgias of the Occiput, Neck and Shoulder, *Arch. Surg.* 43: 113-127 (July) 1941.

19. Dogliotti, A. M.: First Surgical Sections, in Man, of the Lemniscus Lateralis (Pain-Temperature Path) at the Brain Stem, for the Treatment of Rebellious Pain, *Anesth. & Analg.* 17: 143-145 (May-June) 1938.

20. Walker, A. E.: Mesencephalic Tractotomy: A Method for the Relief of Unilateral Intractable Pain, *Arch. Surg.* 44: 953-962 (May) 1942.

21. In a case reported by Michelsen²⁰ a depressed parietal fracture with cortical irritation of the postcentral arm area caused pain very similar to that experienced from a disagreeable phantom to radiate down the opposite arm. By infiltrating the brachial plexus I was able to obtain a complete motor and sensory paralysis, yet the pain which seemed to originate in her arm remained unaltered.

22. Head, H., and Holmes, G.: Sensory Disturbances from Cerebral Lesions, *Brain* 34: 102-254 (Nov.) 1911.

23. de Gutiérrez-Mahoney, W.: Personal communication to the author.

the corticothalamic connections, as pointed out by Gerstmann²⁴ and Nielsen,²⁵ the patient may lose awareness that he possesses portions of the opposite side of his body. This is the antithesis of the phenomenon of the phantom limb and gives additional backing for the surgical ablation of the postcentral convolution of the cerebral cortex. Further evidence in favor of the central representation of long-standing cases of phantom limbs and causalgia is seen in the pain which may be projected to the extremities in patients with tumors or injuries which involve the postcentral sensory areas in the cerebral cortex. Michelsen²⁶ has reported 5 instances which we have observed in the Neurosurgical Clinic of the Massachusetts General Hospital.

It is obvious that this projected attack on the highest station for sensation in the cortex is too new to permit any definite conclusions to be drawn. But the theory can be tested by turning down a small parietal bone flap under local anesthesia, identifying the motor strip by electrical stimulation and infiltrating the first post-central convolution with procaine.

5. *Release from states of agitation by frontal lobotomy.* A final possible approach to the problem of the unbearable phantom is the elimination of the sufferer's introspection and self-centered concentration on his condition which is the natural outcome of long-standing intractable pain. Ordinary psychotherapeutic methods alone have not been effective, but on theoretical grounds bilateral frontal lobotomy might accomplish this result, as it has benefited so many of Freeman and Watts's²⁷ patients suffering from agitated states. A successful operation of this type has been performed by Van Wagenen.²⁸ This patient had had a series of forty-five operations for chronic osteomyelitis, ending up with an amputation of the leg through the pelvis. He continued to have intractable pain in his phantom limb and was a confirmed morphine addict. In the year that has elapsed since the lobotomy he has recovered from his drug addiction, is able to look after his house and has only rare phantom sensations in his amputated leg, which are no longer a cause for serious concern. Another such operation has recently been performed by Dr. W. J. Mixter at the Massachusetts General Hospital, not for relief of pain, but in a young woman with an agitated depression secondary to a severe rhythmic tremor, probably on a postencephalitic basis. This patient had been studied in the Psychiatric Service by Drs. Stanley Cobb and M. E. Cohen but was referred to the Neurosurgical Service after failure of psychotherapy and two suicidal attempts. The tremor is, of course, still present, but her attitude toward it has changed profoundly, so that she no longer regards it as an insurmountable handicap in facing her friends or working in a war plant.

In conclusion, I wish to restate the fact that the attack on intolerable phantom sensations by resection of sensory cortex or by interruption of the frontal association fibers must be regarded as purely experi-

mental procedures which will require extensive investigation before their therapeutic value can be estimated. At present neither of these operations is to be considered except under pressure of extreme suffering and in a patient who threatens, unless relieved, to deteriorate into hopeless invalidism. If successful, they will open up a new method of surgical intervention for heretofore hopeless situations—conditions which cause so much pain and incapacity that the patients either become neurotic invalids and drug addicts or suicides. Every war has produced a new crop, and it may be possible to learn how to relieve the majority of them before the present conflict is over.

SUMMARY AND CONCLUSIONS

1. Incapacitating pain after amputation may be due either to irritation of end-bulb neuromas in the stump or, in the case of a phantom limb with persistence of pain and postural sensations, to their projection from the sensory areas of the cerebral cortex.

2. Local pain, burning and tenderness which are confined to the actual stump can be relieved by:

(a) Chemical or surgical interruption of the regional sympathetic outflow. These relatively minor and non-mutilating procedures are effective in an encouraging proportion of cases, especially when vasoconstriction and sweating are present to an abnormal degree.

(b) Section of the spinothalamic tract (chordotomy).

3. The peculiar pain and unpleasant postural sensations of the phantom limb will occasionally respond to sympathectomy or chordotomy, especially if the operation is performed at an early date, but these procedures invariably fail when the personality has started to deteriorate from prolonged suffering, introspection and morphine addiction.

4. In treating difficult problems of this sort it must always be borne in mind that any ineffectual and mutilating procedure, by adding another psychic trauma, must inevitably result in further suffering and loss of morale.

5. Experience has taught that a single resection of a neuroma is justifiable if it is definitely tender and the pain can be relieved by infiltration of procaine hydrochloride. Repeated excision of neuromas, neurectomy, reamputation at higher levels and resection of posterior spinal roots consistently fail and should never be used.

6. In the most severe forms of phantom limb pain, where in the past patients have sunk into hopeless invalidism, become morphine addicts or suicides, it may be possible to obtain relief by new types of surgical intervention directed at the highest centers in the brain. These comprise resection of the contralateral postcentral sensory convolution, from which the phantom sensations appear to be projected, or bilateral division of the frontal association fibers, which may be effective by freeing the patient of his intense introspection and anxiety. At present both must be regarded as purely experimental procedures, which will require extensive investigation before their therapeutic value can be estimated. The reason for presenting these procedures in their present theoretical stage is to call attention to their possibilities with the hope that they may aid in the solution of a hitherto insoluble problem.

24. Gerstmann, Josef: Problem of Imperception of Disease and of Impaired Body Territories with Organic Lesions: Relation to Body Scheme and Its Disorders, *Arch. Neurol. & Psychiat.* 48: 890-913 (Dec.) 1942.

25. Nielsen, J. M.: Disturbances of the Body Scheme: Their Physiological Mechanism, *Bull. Los Angeles Neurol. Soc.* 3: 127-135 (Sept.) 1938.

26. Michelsen, J. J.: Subjective Disturbances of the Sense of Pain from Lesions of the Cerebral Cortex, *Res. Publ. Assn. Nerv. & Ment. Dis.* 23: 86-99, 1943.

27. Freeman, W., and Watts, J. W.: *Psychosurgery: Intelligence, Emotion and Social Behavior Following Prefrontal Lobotomy for Mental Disorders*, Springfield, Ill., Charles C Thomas, 1942.

28. Van Wagenen, W. P.: Personal communication to the author.

THE AMPUTATION STUMP FROM THE PROSTHETIC POINT OF VIEW

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An amputation may be urgently necessary or elective. Once life has been saved, the usefulness of the stump becomes of paramount importance. These two functions of amputation are often quite inseparable, the good surgeon adapting the underlying principles according to the exigencies of the occasion.

SITES AND METHODS OF ELECTIVE AMPUTATIONS

There are desirable sites and methods of amputation which for a given partial loss of limb have a known usefulness and disability. A patient may reasonably require a stump of election to be a good one.

Selection of Site.—Sound elective amputations are those performed through a clean field at a site previously selected in the light of the traumatic, infectious and circulatory status of the limb which will permit fulfillment of all the basic requirements of a good stump. The age, sex and occupation and the social, economic and constitutional status of the patient, availability of a good limb maker and the surgeon's own experience are also important factors.

The Good Stump.—In the good stump there is freedom from pain, infection and circulatory disturbances. The soft tissues at the pressure areas are free from scarring. Nerve stumps are removed from pressure sites. There are no painful, projecting bone ends or spurs. The joints are freely and strongly movable by active muscles operating through an effective bony lever. In the lower extremity, end weight bearing and good knee joint function are of great value. Obviously, one cannot often have both.

Relation of Scar to Prosthetic and Anatomic Pressure Areas.—Since a stump's function is largely determined by the nutritional status of the pressure areas, the surgeon must know these areas for each type of stump and prosthesis. The best way to learn this is to examine various types of stumps of many years' usefulness. He will also observe that some features of a stump are more important than others. He will then be able better to evaluate various indications, sites, surgical techniques, postoperative methods of care and prostheses.

As the palmar aspect of the hand and fingers is primarily adapted to grasping, so is the plantar aspect of the foot and toes adapted to full weight bearing. Note that the pressure pads extend over the tips of the digits. Finger, toe, hand and foot stumps should imitate nature. Form them from long palmar and plantar flaps and avoid a sensitive stump end.

The anterior aspect of the knee and the ischial area are partially adapted to weight bearing. Under favorable conditions they will become adapted to full weight bearing.

The skin over the patellar tendon, tibial tubercle, anterior tibial condyle and head of the fibula will adapt itself to considerable weight bearing in a properly fitted

socket. The calf and thigh skin will take less pressure, but because of mechanical factors body weight is poorly transmitted through the lateral surfaces of the stump anyway.

Calf and lower thigh stump ends may occasionally bear some weight when the socket is fitted with an end pad. Therefore the scar should be posterior to the bone end. Even without end bearing, if the bone end is scantily covered transmission of the lateral pressure puts tension on the skin not well tolerated by scar adherent to the bone.

In the forearm and arm the stump end is not subject to pressure, since the prosthesis is actuated by lateral pressure. The scar should therefore be at the end of the stump.

Relation of Stump Shape to Prosthesis.—Major stumps of the extremities are somewhat conoidal throughout or terminate in a bulbous end. The Symes type stump at the heel and ankle and the end bearing knee stumps, the condylar, patelloplastic (Gritti-Stokes), capsuloplastic through the flare of the condyles will be bulbous, since they preserve a broad end bearing pad and are fitted with prostheses that are laced on, not fixed sockets entered from the end. Forearm, arm, lower leg and thigh stumps must be slightly conoidal in order to enter and withdraw from their fixed conoidal sockets. While these stumps must taper somewhat, they should not end in a projecting point of bone. Such a stump becomes painful and ulcerates on use. In the case of a midlower leg stump with a large muscular calf, the great bulk of the muscle bulges out in greater cross section than the tibial weight bearing area. The excess muscle should be cut off, since reasonable nicety in shaping the stump at operation will save much delay in conditioning and fitting it with a prosthesis.

The shape of the stump end is determined by the tissues utilized in covering it. The surgeon will bear in mind whether the stump is to be end weight bearing or not. If the first, then he must cover the end with skin and subcutaneous tissue capable of weight bearing. Avoid the useless practice of closing muscle flaps over the bone. It prolongs the period necessary to condition the stump to its final shape, size and consistency. Skin and the entire subcutaneous fascia will do very well. In certain stumps, muscular fascia or flat tendons are valuable in covering the bone end.

Efficiency of the Bony Lever as Regards Its Length and the Cross Section of Surrounding Soft Tissues.—The prosthetic efficiency of a bony lever is measured neither by its length nor by the size of the muscle cross section about it. If the bone is too long, as in amputation in the distal half of the lower leg, it is poorly clad with soft tissue. The slender, pointed stump end fits snugly in an unyielding socket; the skin is under constant pressure; its circulation suffers and stump troubles ensue. A shorter, suitably clad stump is better. Also the prosthesis can then be made to look like the other leg.

Conversely, with a midthigh or upper thigh stump, the usually large muscular cross section causes increased lurch from the telescoping of the limb within itself and the socket on weight bearing. While the bony lever is strongly actuated, its effectiveness is diminished by the play of the femoral stump within the soft tissues. In the thigh, every fraction of an inch above the lower thigh is precious.

While sites of election are still matters for discussion, it should be clear that there are a few basic physiologic and mechanical principles underlying the success or failure of each case. Intelligent application of these principles will increase the percentage of our successes.

SURGICAL TECHNIC

Most poor stumps are due to faulty surgery as to level, type and execution of procedure and postoperative care.

Tourniquet.—Too tightly applied tourniquets have caused serious vascular and nerve injury. If too loose, venous bleeding is increased. Familiarity with the location of the important vessels facilitates their isolation and clamping, so that a tourniquet is not strictly necessary. This should generally be the case in amputations for peripheral occlusive vascular disease. Otherwise the use of a tourniquet, preferably pneumatic, aids in a clean cut, accurate, gentle and reasonably rapid dissection.

Hemostasis.—The visible arteries and veins are ligated before release of the tourniquet. The larger arteries are carefully isolated with minimal soft tissue about them, doubly ligated at a gently clamped (not crushed) site with chromic O or equivalent, leaving a small distal tab. On large arteries, one of the ligatures should be of the transfixion type. On release of the tourniquet the bleeding points are grasped with fine forceps, avoiding unnecessary tissue, and ligated with plain OO or equivalent. The wound should be as dry as possible before closure.

Incision.—Before making the incision, visualize or mark the proposed levels of soft tissue and bone severance so as to have the proper ratio. It is better to trim off excess soft tissue at closure than shorten the bone to an unfavorable length.

The knife is carried at a right angle through the skin and superficial fascia to its deepest layer immediately overlying the muscular, paratendinous, capsular fascia or the periosteum, as the case may be. The physical and circulatory integrity of the skin and superficial fascial flap must not be impaired. It is much more easily reflected anyway in the fascial plane between it and the deep fascia. Where the deepest layer of superficial fascia is fused to the deep fascia, include this with the superficial flap; for example, the fascia lata of the thigh, the muscular fascia of the quadriceps femoris, the deep fascia, capsule, tendon or even bone (patella) in front of the knee; the thin layer of deep fascia over the subcutaneous surface of the tibia, in turn continuous with the muscular fascia of the anterior compartment and closely overlying the periosteum, which must be left behind.

Pattern of the Superficial Flaps.—All styles of flaps are derived from the circular method which cuts and devitalizes the least tissue and is therefore the surgeon's general choice in amputations of necessity. When the several layers, including the bone, are so cut at successively higher levels and left open, best with a bit of traction, many times a good, useful stump will result without reoperation or only a minor one. An oval flap may well save useful length. Short, long, equal, unequal, anterior, posterior or lateral flaps and longitudinal extensions should be used only when necessary and not to demonstrate some anatomy that need never see the light of day. The purposes of flaps are to cover the bone end with either weight bearing or

non-weight bearing soft tissue, to preserve the most useful stump length, to permit the necessary bone exposure with the least soft tissue trauma and to place the scar advantageously.

The Muscle Flap.—Closing muscle over the bone end merely delays stump conditioning while it degenerates and fibroses. Its bulk makes the end bulbous. Its slow shrinkage delays fitting the final prosthesis. Incise the muscular fascia distal to the bone level, incise muscle bellies circularly at the bone level, allowing the fibers to retract. The muscular fascia is closed over the bone. At sites where there is a broad muscular tendon, as the triceps of the arm and the calf group in the middle third, the muscle may be cleanly sliced off leaving a vascular tendinous flap sufficiently long to close over the bone, suturing it to the deep fascia anteriorly. In the distal forearm, the musculotendinous junctions are closed over the bone, in the proximal forearm only the muscular fascia.

The Periosteum.—The bone is exposed extraperiosteally for a short distance above the proposed saw line. A sharp knife is carried circularly through the periosteum $\frac{1}{8}$ inch above this line. The periosteum is sharply scraped distally, leaving no shreds behind. The bone is sawn off at a right angle to its long axis or in the lower extremity to the weight bearing line $\frac{1}{8}$ inch distal to the sharply cut, untraumatized periosteum. The marrow is not disturbed. For beveling the crest of the tibia, the periosteal incision is suitably shaped to allow beveling without further periosteal trauma. Sharp bone edges are smoothed with a sharp rasp. No proximal stripping is permitted, especial care being necessary at lines of muscular attachment, interosseous membranes and irregularly shaped bone, especially the fibula.

The Nerve Stump.—Nerves are identified during the formation of the flaps, clamped and cut. Before closure they are gently distracted and cut sharply across proximal to the level of the stump scar or level of pressure against the prosthesis. Larger nerves with vessels which would bleed are clamped and tied with small suture material.

Closure.—The flaps are tested for closure. Any excess is cut off. If there is too little soft tissue, more bone must be removed. Too much muscle is often the cause of undue tension of skin closure. The wound is closed in layers of muscular or deep fascia, and superficial fascia by interrupted mattress sutures of O catgut size or equivalent, as few as necessary being used and no more tissue being included than the suture strength calls for. The superficial fascia being approximated, moderately spaced fine silk skin sutures will readily coapt the skin. Drains are rarely necessary.

The Dressing.—A strip of xeroform gauze will add to the patient's comfort when the dressing is removed ten days later for removal of the stitches. A flat gauze layer is applied over the strip: then fluffed gauze is moderately snugged about the stump with a bandage, preferably elastic as bias cut muslin or stockinet.

Splinting.—Simple coaptation splints may be all that is necessary. Flexion deformities at the hip and knee are due to muscle spasm from the operative trauma, closure under tension increased by the swelling from roughly handled tissues. A light plaster splint is easy to apply and is efficient. Should there be unavoidable tension, traction through adhesive strips applied close to the wound is very helpful.

Postoperative Management.—Elevation of the part if the arterial supply is adequate will avoid much post-operative swelling. As the stump becomes comfortable and circulatory balance is obtained, periods of dependence increasing in duration and frequency are in order. Buerger-Allen passive vascular exercises may often be started before removal of the stitches. Barring fever, increased pain and drainage, the dressing is left undisturbed until this time. After the wound is healed, an elastic bandage is used to control circulatory stasis. Much of the "shrinkage" of the stump prior to wearing the prosthesis is merely recovery from the congested postoperative state. The better the surgery, the less the congestive and fibrotic condition to be recovered from. Graduated exposure of the stump to air, sun, soap and water, friction, exercise and dependence should condition the stump to permit fitting the prosthesis in weeks, not months.

Wearing the Prosthesis.—Early graduated weight bearing in a well fitting prosthesis is the final "making of the stump." It is not enough to start with a well fitted socket: it must be kept well fitting at all times. The stump pressure areas will not tolerate abuse or neglect. When localized discomfort and undue reactive rubor from spotty pressure appears, weight bearing must be discontinued and suitable adjustment made to the socket. Weight bearing only within tolerance limits is the rule. Particularly in the lower part of the leg, the inability of the tissue to stand the pressure exerted by the first socket on the weight bearing areas may soon become apparent again. Even if the skin does not break down, the daily period of weight bearing activity is diminished because of the feeling of weakness, insecurity, discomfort and pain. Early excessive pressure from poorly graduated use of a poorly fitted prosthesis produces permanent atrophic and fibrotic changes and diminishes the future usefulness of the stump. Poor skin hygiene is often followed by folliculitis and dermatitis.

Too often shrinkage is not promptly met by the use of interliners or new sockets. Frequently the second socket is made only after irreversible tissue changes have already taken place.

In various communities, limb makers are differently experienced in the fitting of the several types of stumps. The problem of the limb maker and his servicing of the prosthesis cannot be ignored. Some surgical and prosthetic customs are too fixed. Surgeons and prosthetists must learn from and cooperate with each other.

ELECTIVE SITES

Upper Extremity.—The function of the hand is determined by the ability to oppose the thumb and fingers and the security of its grasp. Any partial loss of the digits must leave a stump which will tolerate the friction and pressure of handling objects without discomfort. The patient should be able to tap hard on a table top with the end of the stump.

Distal Phalanx.—Very small tip defects will cover over well spontaneously, small ones with traction, and moderate defects require skin grafting. Larger defects usually require shortening of the bone to secure covering of the tip with pressure bearing palmar skin and subcutaneous tissue. Save the nail bed when possible. Save the distal interphalangeal joint but not at the expense of a sensitive stump.

Middle Phalanx.—Save all length possible. Since flexion is maintained by the sublimis, the deep flexor tendon need not be sutured.

Proximal Phalanx.—Its full bony length should be preserved. Suture the sublimis tendon to the dorsal aponeurosis, otherwise there will be no flexion control. A short stump is useless and should be removed if the other digits are intact. In the index finger, when strength of grasp is primary even a short stump usually adds to security. Ordinarily remove the short stump with the distal third to one half of the metacarpal by oblique osteotomy; dexterity and appearance are improved.

A stiff, straight finger is useless; remove it. But only one or two stiff fingers sufficiently flexed to permit opposition with a movable thumb are useful.

The opposing thumb is the most useful unit of the hand. Any part is useful even in complete loss of fingers, when artificial ones are used. An artificial thumb with movable fingers is less useful.

Principles.—Preserve all possible tissue initially. At definitive surgery, cover pressure areas with palmar tissue; leave a dorsal scar. Avoid closure under tension. Use a pressure dressing and elevation to avoid circulatory stasis. Don't use epinephrine in a finger block. Don't use a finger tourniquet.

The Forearm.—When no grasp whatever can be salvaged from a hand even with a prosthesis, maximum function will be obtained with a prosthesis fitted to the elective forearm stump. This is not higher than the middle and distal thirds or 2 to 4 inches above the distal ends of the radius and ulna. Some patients will insist on all possible length only to find the stump too long for a handy prosthesis and fit only for a paw. Use short, equal flaps for an end scar, since pressure in the prosthesis is lateral.

Above the middle and distal thirds, every fraction of an inch loses control and power until with a 2 inch stump the artificial hand is no longer operated effectively.

The Upper Arm.—Practically, an upper arm prosthesis is worn for esthetic purposes. Leaving the condyles as in an elbow disarticulation gives a clumsy stump and unnatural prosthesis. The elective site is 2 inches above the elbow joint line. With shoulder amputations, for the sake of appearance and simpler surgery, the humeral head is retained when the condition permits.

THE LOWER EXTREMITY

The loss of the toes causes little or no disability save for slight nondisabling loss of push off in vigorous walkers when the great toe is gone. A filler pad in the shoe adds to the patient's comfort. Place the scar dorsally and avoid disabling pain. Amputation through the base of the proximal phalanx is slightly easier and less traumatizing than disarticulation.

Metatarsals.—Preserve length only if the plantar flap will cover the bone ends and leave a dorsal scar. Carefully smooth the bone ends.

Metatarsal-Tarsal (Lisfranc) Amputation.—This fully end weight bearing elective site is very good when sufficient normal plantar flap is available to cover the end and give a dorsal scar. Preservation of the bases of the first and fifth metatarsals preserves better balance. A carefully fitted arch support and toe pad in the shoe

will improve function though the patient can walk without prosthesis or only a simple toe filler pad.

The Tarsal (Chopart) Amputation.—Amputation through the tarsus is not advised, since the muscle balance present in the Lisfranc is lacking. The next higher level is advised.

The Symes Amputation.—This amputation places the fully weight bearing pad of the heel over the distal ends of the tibia and fibula just above the level of the ankle joint. Since this stump is useless unless fully end bearing, the tissue of the heel pad must be normal before operation, be accurately placed on the lower leg at the operation, which must not impair the vitality of the flap, and be maintained in good position until firmly united. Reamputation at a higher level months or years later may usually be avoided by proper selection of cases, careful technic, reasonable use of the stump by the patient and fortunate absence of progressive vascular disease. The prosthesis is too clumsy to be satisfactory for most women but gives excellent weight bearing and a good push off on the ball of the artificial foot. The anterior scar should come just above the slight flare of the bones so as not to become irritated.

The incision consists of a transverse anterior portion and a vertical U passing under and in front of the heel from their common starting point at the malleolar level in the midaxial line of the leg as seen laterally. An anterior oval incision is somewhat simpler and easier to close. It is carried deeply through skin to ankle joint capsule, lateral ligaments, periosteum and plantar fascia. The ankle joint capsule is incised transversely, the astragalus freed from the mortice ligaments and displaced anteriorly, so as to permit dissection of the os calcis out of the posterior heel flap. This is carried out just extraperiosteally, great pains being taken not to traumatize the exposed soft tissue of the flap. Failure in these steps will jeopardize the vitality of the flap. Everywhere the deepest layer of the superficial fascia is left intact, in many areas the deep fascia as well and, of course, the achilles tendon. The muscles taking origin on the os calcis are left attached, though they may be dissected off the flap if originally included in it. The mortice is exposed by sharp extraperiosteal dissection and the malleoli sawed off one-fourth to one-half inch proximal to the tibial articular surface, the aperiosteal technic previously described being used.

After suitable ligation of the larger vessels the tourniquet is removed and as nearly perfect hemostasis as possible is obtained.

By this time the flap will have shrunk some, but the fitting of the long posterior flap to the anterior one takes judgment and patience. The bony stump must fit snugly in the center of the heel pad, which must not be permitted to slide sideways or forward. Ears may be judiciously trimmed but are usually better left alone. Small rubber drains in the corners and a snug pressure dressing maintaining the pad in place complete the operation.

At the first dressing, when the drains are removed, the position of the heel pad should be carefully checked.

The Lower Leg.—Tibial stump length of $6\frac{1}{2}$ to 7 inches is ideal; even $4\frac{1}{2}$ inches of bone length will give good function. But stumps with less than 2 inches length below the medial hamstrings are seldom effective. Near or at the hamstring level, full end bearing

may be obtained by fitting with the knee flexed 90 degrees, using a laced socket.

The flaps should be broad, not pointed, the posterior one short, the anterior of medium length. The fibula is exposed by a posterolateral extension of the flap incision. Include the deepest layer of the superficial (fatty) layer in the incision. The treatment of the muscle, periosteum and so on has been previously described. The months so commonly necessary before fitting the prosthesis to lower leg stumps often have their basis in the trauma to the soft parts at operation. Expose the fibula in the muscle plane, sharply cutting the muscular and septal attachments; remove the periosteum from above the level of osteotomy. A Gigli saw obviates much retraction. Cut the fibula off 1 to 2 inches above the tibial site. Smooth the corners well. In short lower leg stumps it is often advisable to remove the entire fibula. When there is question as to the infectious status of the tissues do not do so, since the knee joint may be infected by continuity.

There have been many unsatisfactory lower leg stumps. Some experienced surgeons believe an end weight bearing lower thigh stump, particularly the Gritti-Stokes, is preferable in the long run to even a good lower leg stump. Generally the performance over many years of a good lower leg stump with a well serviced prosthesis will permit no needless sacrifice of the knee joint.

Amputations at the Knee and Distal Thigh.—Good condylar, Gritti-Stokes, capsuloplastic (Callander) and tendinoplastic (lower third) stumps permit considerable to complete end weight bearing.

All end bearing stumps at the knee and lower third must have a posterior scar. Owing to the retraction of the hamstrings and the nonretraction of the relatively fixed quadriceps muscle, even the circular open method will result in a posterior scar if sufficient soft tissue is present.

Even the time honored long anterior flap of the Gritti-Stokes amputation appears unnecessary after using a circular or oval incision with less dissection and vascular disturbance.

The method of condylar amputation as shown by Perry Rogers has given excellent end bearing stumps. In suitable cases it appears that the previously somewhat discredited condylar amputation at the knee merits serious consideration. The outside knee joint of the prosthesis presents an esthetic objection as with other excessively long thigh stumps.

Gritti-Stokes Method.—The essential feature of a good stump by this method is covering the bone end with an intact anterior flap of weight bearing skin, subcutaneous tissue, prepatellar fascia and the anterior portion of the patella, which should unite to the end of the femur. Usually a long anterior and a short posterior flap are formed. It is not necessary or desirable to dissect the skin and subcutaneous flap from the underlying patellotendinous flap. Saw off the posterior articular half of the patella before sectioning the femur. Section the femur at (not above) the level of the upper pole of the patella as noted with the anterior flap lying in its natural position. This is at the upper part of the flare of the femoral condyles. The patella will then naturally lie over the end of the femur. It should not drop posteriorly as when the femur is cut too short. Minimal dissection of the tissues from the femur will

minimize lateral mobility of the patella and help prevent lateral dislocation postoperatively. The patella may be sutured to the femur through drill holes or to the popliteal fascia and hamstring tendons. In any event, check the position of the patella every few days until fixation in good position occurs. Manually replace it if displaced, and maintain position by suitable bandaging. Rebandage as the effusion subsides.

Poor stumps and outright failures result from faulty selection of cases, interference with the circulation of the flap from excessive dissection and undercutting, faulty bone length and a loose wobbly pad of soft tissue and patella.

Tendinoplastic Method.—Excellent stumps, many of which are quite capable of end bearing, are obtained by bone section in the lower third with the soft tissue incision at the patellar level. The circular incision is ideal. Short square flaps take care of the ears if annoying to the surgeon but tend to lead to unnecessary dissection.

Middle Third of the Thigh.—As the more muscular portion of the thigh is approached, short anteroposterior flaps of gradually increasing length are very useful in reducing the trauma incident to the exposure and section of the femur. At a suitable more distal level the knife is carried through skin, fat and deep fascia, including the muscular fascia. With freeing at the septums the muscle bellies are exposed at a higher level, where they are sectioned circularly, each layer being allowed to retract before going deeper. As the deeper layers are cut they retract less and less. The exposed bone is sectioned by means of the aperiosteal technic. The great vessels are exposed in their fascial channels, doubly clamped and cut as the sectioning of the muscle proceeds. On closure, no muscle flap is turned over the bone stump. Owing to the absence of a large traumatized muscle mass, interrupted fine fascial and skin sutures are all that are necessary. The stump is well shaped. There is no muscle mass to shrink slowly. There is no blob of soft tissue at the end of the stump.

AMPUTATION STUMPS OF NECESSITY AND COMPROMISE

Doubtless many a surgeon has been surprised, after performing an amputation of necessity on leaving the stump open or compromising on selection of soft tissues and the location of the scar to preserve length, to find the stump serving very well from a prosthetic point of view without a secondary plastic operation, let alone a reamputation.

Simple procedures are often best. While life saving amputations should not primarily be concerned with securing a permanent stump, there is no need to sacrifice healthy tissue, useful length or leave a projecting bone end.

The circular or oval incision with muscle and bone cut at higher levels many times results in good functional stumps. The surgeon should be aware at the time of the emergency amputation that healing time, dressings, pain and disability are reduced by this method of open amputation.

The principle of traction in controlling retraction of tissues so well proved in the short sleeve of the stepped guillotine or circular amputation should likewise be applied to closed cases in which the soft tissue closure needs relief from tension. The splinting of traction

utilizes the principle of rest in wound healing. Rest should be afforded closed stumps as well. A light plaster of paris bandage is excellent, being efficient, convenient and easy to apply.

It is urged that these simple principles be utilized more in the closed method as well.

RECAPITULATION

Poor stumps often result from surgical errors:

1. Wrong choice of level and type of procedure.
2. Excessive soft tissue dissection, periosteal stripping, trauma, strangulation ligatures and sutures.
3. Soft tissue closure under tension.
4. Redundant soft tissue.
5. Failure to use the open method when in doubt as to circulatory status and infection.
6. Failure to utilize traction or splinting.
7. Neglect of postoperative conditioning of stump, joints, muscle and skin.

Good stumps are made by good surgery:

1. Amputate through viable tissue, neither losing probably useful length nor risking the patient's life in attempting an elective closed amputation when a simple circular open amputation will conserve both.

2. Incise directly through each layer of tissue, the skin, fat and muscular fascia, the muscle, periosteum and the bone at successive levels, not slicing or undercutting or making extensive flaps. Freeing of connecting tissues of the several layers as at intermuscular septums is desirable. Cut the periosteum cleanly, leaving no shreds or flaps behind, and no spurs will form. Leave the bone end with a blood supply and avoid a ring sequestrum. Gentle retraction diminishes postoperative swelling. Careful hemostasis and minimal tissue within ties and sutures shortens postoperative healing and reduces circulatory disturbances. The stump will shrink less and hold up better.

3. Avoid tension; it prevents free circulation. This is a basic surgical principle. Long flaps are not necessary. Plan to have the correct ratio between soft tissue and bone length; don't leave it up to traction, handy stump saver that it is.

4. Trim excessive soft tissue off now; it will save doing it later.

5. Use the open method in cases of infection or potential infection. Healing is often rapid. Many stumps will be good without further surgery. If not, secondary closure, plastic operation or reamputation will make them so.

6. Use traction to maintain soft tissue length beyond the bone. Contracting granulation tissue will do the rest. When traction is unnecessary, a light plaster bandage rests the part—it heals better.

7. Use active motion as healing permits; it improves circulation, frees joint motion, builds muscle. Use an elastic bandage for congested stumps. Graduated friction and pressure accustom the stump to its next job—a prosthesis for weight bearing as soon as possible. The skin must be kept clean; soap, water, air and sun minimize minor cutaneous infections. Early graduated weight bearing on a well fitted prosthesis builds a healthy tough dermis. Don't abuse it.

Ashburn General Hospital, McKinney, Texas.

TEMPORARY PROSTHESES

LIEUTENANT COLONEL T. CAMPBELL THOMPSON
MEDICAL CORPS, ARMY OF THE UNITED STATES

The interval of time which elapses between the loss of an extremity and the application of a permanent prosthesis is a very difficult period of physical and mental adjustment. Anything that can be done to shorten this period and make the adjustment simpler, more rapid and more complete is well worth while.

All factors which tend to establish early painless weight bearing should be understood and applied. Operative and postoperative methods which provide a well healed painless stump as rapidly as possible are of primary importance. Early weight bearing is essential in toughening up a stump to make it fit for prolonged weight bearing. The accompanying illustrations will show some of the things that can be done to obtain a satisfactory stump, and various types of temporary

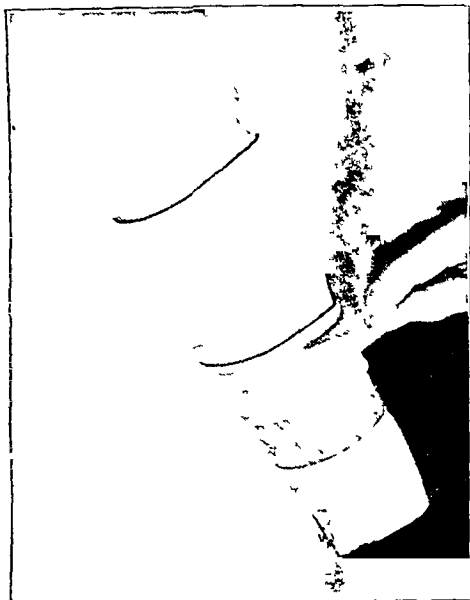


Fig 1.—Applying stockinet and cardboard for building pylon.

prostheses will be demonstrated to show what can be done to provide amputees with walking appliances shortly after their stumps are healed.

Following the practice developed after the last war, it has been the policy at Walter Reed General Hospital to order an adjustable fiber leg (which compares quite favorably with the standard permanent legs on the market) as soon as the amputee is admitted, or when an amputation is performed. The leather bucket or socket for this leg is made as soon as the stump is well healed. As the leg shrinks, a new socket is made whenever the old one becomes too large. When these well made, easily changed fiber legs are not available, temporary plaster pylons are most valuable in toughening up the stumps and shortening the period during which the patient is entirely dependent on crutches.

The first question that a patient asks after losing a leg is "Doctor, when shall I get my new leg?" The mere act of measuring a patient for a leg, and his knowing that it is being made, cause him to look forward to brighter days instead of spending his time bemoaning his lot.

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A recent convoy of patients who had been transferred from one hospital to another, during their evacuation, were primarily interested in getting furloughs to see their families. The amputation patients, however, were primarily interested in "When shall I get my leg?"

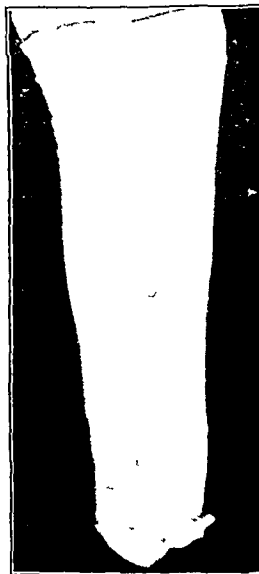


Figure 2.

Fig. 2.—Stockinet pulled down over cardboard. Ready for application of plaster cast.

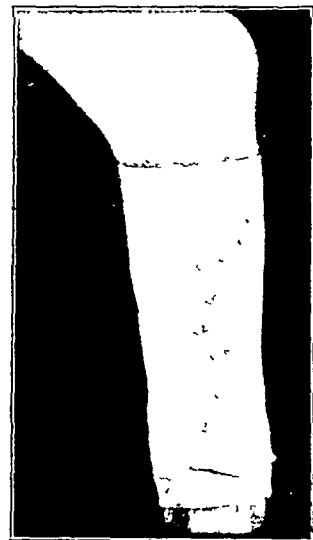


Figure 3

Fig. 3.—Plaster applied, forming socket for pylon.

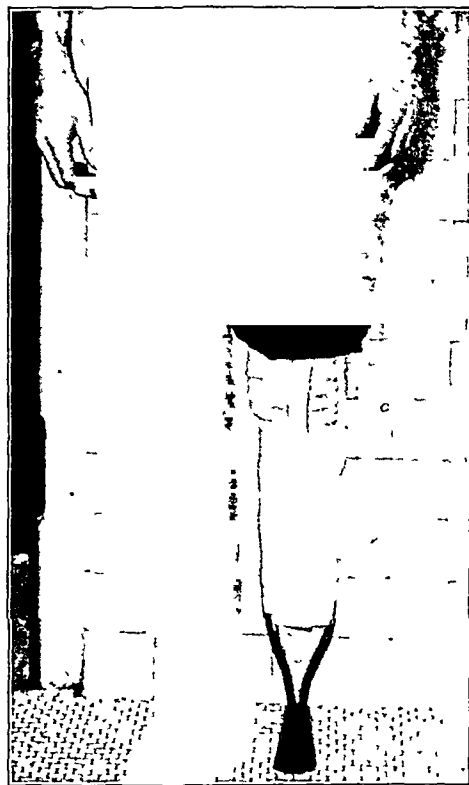


FIG 4—Plaster socket incorporated into walking iron with crutch tip

Measurements were taken and, while their legs were being made, short furloughs were granted, sometimes with the patient on crutches, but often on a temporary plaster pylon.

The following instances of war casualties illustrate three of the more important points:

1. Well healed satisfactory stumps should be obtained as soon as possible.

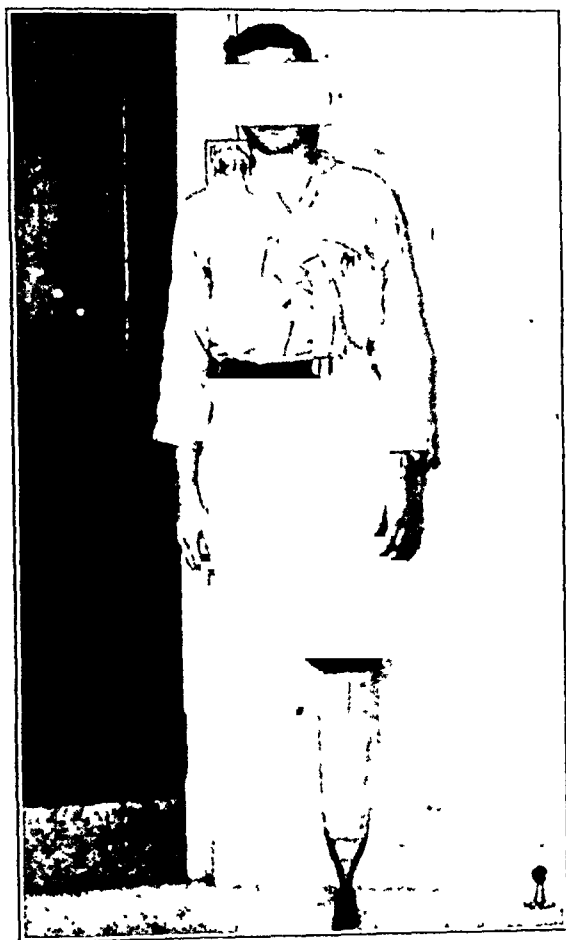


Fig. 5.—Patient walking to toughen up stump.

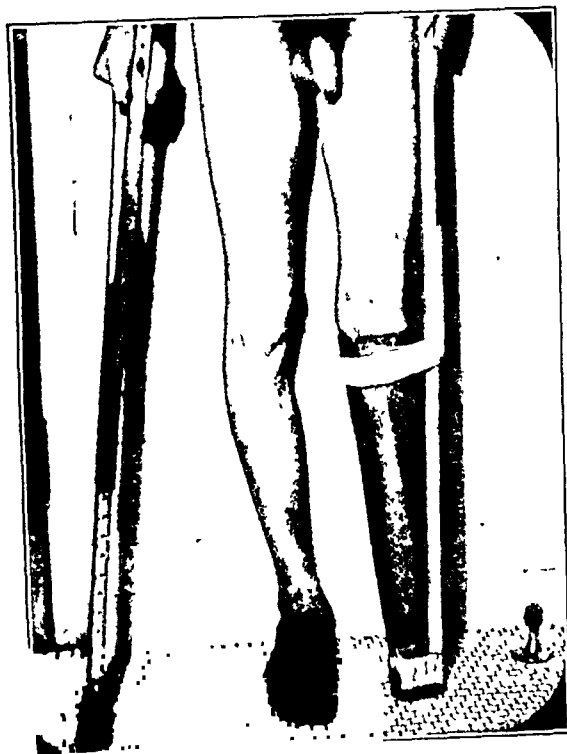


Fig. 6.—Crude temporary cardboard prosthesis.

CASE 1.—An aviator who crashed in Greenland had both feet frozen so badly that they sloughed off. The patient could not be reached and evacuated until eighty-eight days after the accident. Immediate midleg amputations were done and legs fitted as soon as the stumps were healed.

2. Amputations should be of the guillotine, or open, type (especially in wartime), but traction applied at the time of amputation is absolutely essential in order to obtain a satisfactory stump. Cases 2 and 3 show what happens when this important postamputation treatment is omitted. Case 4 shows how readily a good stump can be obtained if constant traction is used.

CASE 2.—A soldier aged 21 received a severe compound fracture of the right lower leg from artillery fire on Nov. 8, 1942. The circulation in the foot was inadequate, and a guillotine amputation was performed on November 11. No traction was used. On admission to Walter Reed General Hospital there was pronounced retraction of the skin. An effort was made on December 10 to save the knee by removing the fibula and freeing the skin; as satisfactory skin could not be obtained over the end of the stump by this procedure and because severe phantom limb pain persisted, a supracondylar amputation was done on Jan. 7, 1943. The phantom limb pain was eliminated and a satisfactory stump was obtained.

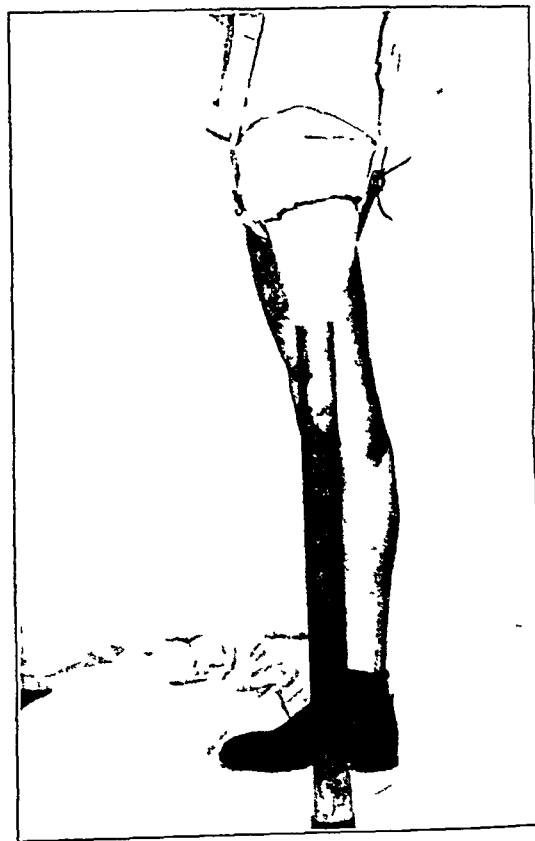


Fig. 7.—Lateral view of temporary pylon.

CASE 3.—A soldier aged 23 received a high explosive wound in the left popliteal space on Nov. 10, 1942. Five minutes later a hand grenade was tossed into his shell hole, and the explosion produced a traumatic amputation of the right lower extremity just above the knee. A débridement was done the same day, but no traction was used until November 28, when he was admitted to Walter Reed General Hospital. Bone and soft tissue protruded 3 inches beyond the skin margins. After three weeks of constant traction the skin had come down even with the end of the bone. After six weeks of traction the bone was well covered. A plastic closure was done on Jan. 20, 1943, and a good stump obtained.

CASE 4.—On Nov. 8, 1942 a soldier aged 26 received a gunshot wound of the left thigh which injured the popliteal artery. Gangrene of the foot and leg developed, and a low thigh guillotine amputation was performed on November 13. Constant skin traction was used. Three weeks after amputation the condition of the stump was excellent.

Traction was used together with a small wooden spreader to produce a transverse instead of a circular scar. Healing and contraction of the scar under seven weeks' constant traction was rapid. The patient was allowed up on crutches during

the day, but traction was constant. A complete closure of the stump was done on Jan 14, 1943, just two months after the injury.

3. Temporary prostheses are most important in toughening up the stumps and preparing them for permanent legs.

Figure 6 shows an ingenious and extremely simple type of prosthesis that was used in the Danish Hospital in Paris during the last war. A heavy cardboard cornucopia is attached to a wooden stick. The patient uses this as a cane but bears some of his weight on his stump. It is laid aside when he sits down.



Fig 8—Permanent upper and lower extremity prostheses fitted. Patient ready for rehabilitation.

The various steps in making a plaster pylon for a below knee stump are shown in figures 1 to 5. (Incidentally, this stump was too long, and reamputation was done later.)

Plaster pylons for thigh stumps are made in a similar manner.

The adjustable fiber prostheses which are ordered at the time of amputation are shown in figure 10. They are strong, durable and inexpensive. The removable leather buckets can be made and the entire leg fitted and adjusted as necessary by any well trained brace maker, preferably one with some experience in artificial legs. These prostheses function practically as well as high priced willow or aluminum legs.

CASE 6.—A soldier aged 23 picked up two 37 caliber duds on April 11, 1941; an explosion blew off all the fingers of his right hand and produced a compound fracture of the left femur in the lower third. The right hand was amputated at the wrist.

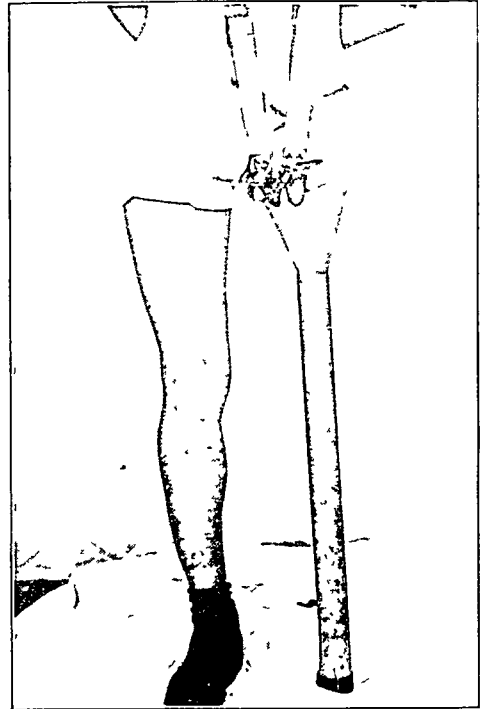


Fig 9—Temporary pylon for short thigh stump

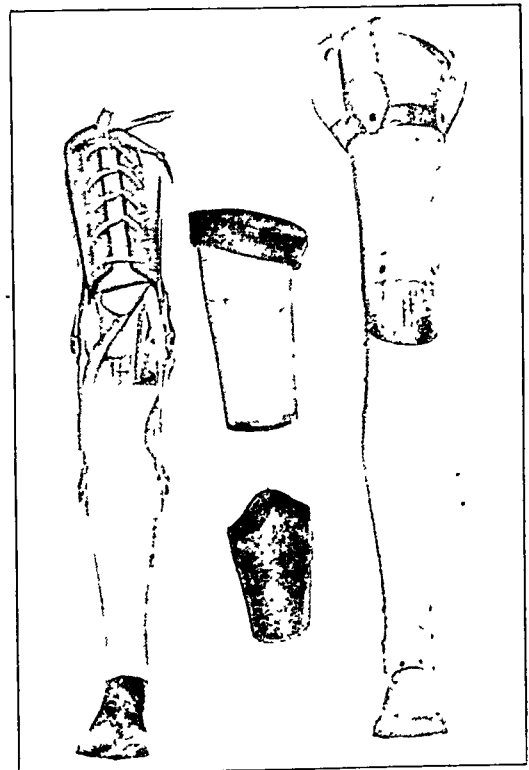


Fig 10—Adjustable fiber prostheses with molded leather sockets for leg and thigh stumps.

and the left femur was treated with Roger Anderson pin fixation. Because of intensive infection of the fracture site and the pin wounds, a high guillotine amputation was performed on August 29. A partially successful skin graft was performed

on October 27. The patient was admitted to Walter Reed General Hospital on June 26, 1942 for the treatment of a very short, painful left thigh stump with an adherent terminal scar and a right arm stump too long for a prosthesis. The right arm was reamputated and a plastic procedure performed on the left thigh stump. The temporary peg leg (on which the patient walked very well) and the final arm and leg prostheses are shown in figures 7, 8 and 10.

THE PERMANENT PROSTHESIS

ATHA THOMAS, M.D.

DENVER

Modern skill has brought no more useful aid to humanity than the artificial limb, or prosthesis, which transforms a helpless dependent into a useful member of society. The modern limb maker is a highly skilled artisan who is eager to aid the surgeon in the rehabilitation of his patient. He belongs to an old and honorable guild with a record of fine service and with a high code of ethics, designed to prevent exploitation of

the handicapped by the unscrupulous. Such a code of ethics is subscribed to by the Association of Limb Manufacturers of America. This organization is doing a splendid work through its educational and research program in advancing knowledge and skill in the manufacture and fitting of artificial limbs.

It should be the responsibility of the surgeon to advise the patient as to his permanent prosthesis and to supervise the fitting of the appliance. Many otherwise competent surgeons, through ignorance, prejudice or lack of interest, fail to accept this responsibility and dismiss the patient as soon as the stump is healed, with little or no advice as to the permanent prosthesis.

The surgeon need not have an intimate knowledge of the details of the materials and construction of the artificial limb. He should, however, be sufficiently familiar with the various types

Fig. 1.—Conventional prosthesis for midcalf amputations. The weight is borne largely on the sloping surfaces of the tibial condyles, anteriorly and laterally.

of limbs available and should have some knowledge of the standard types of joint control mechanisms. He should know enough about the fitting of appliances to

This paper, in a symposium on "Amputations," is published under the auspices of the Section on Orthopedic Surgery. The executive officers of the Association of Limb Manufacturers of America gave generous help in furnishing data and models.

recognize it as a skilled art and advise his patient as to the advantage of a personal fitting at the place of manufacture.

The emotional disturbances accompanying the loss of a limb are often serious, and the necessary adjustment to the loss is difficult for some patients. This problem

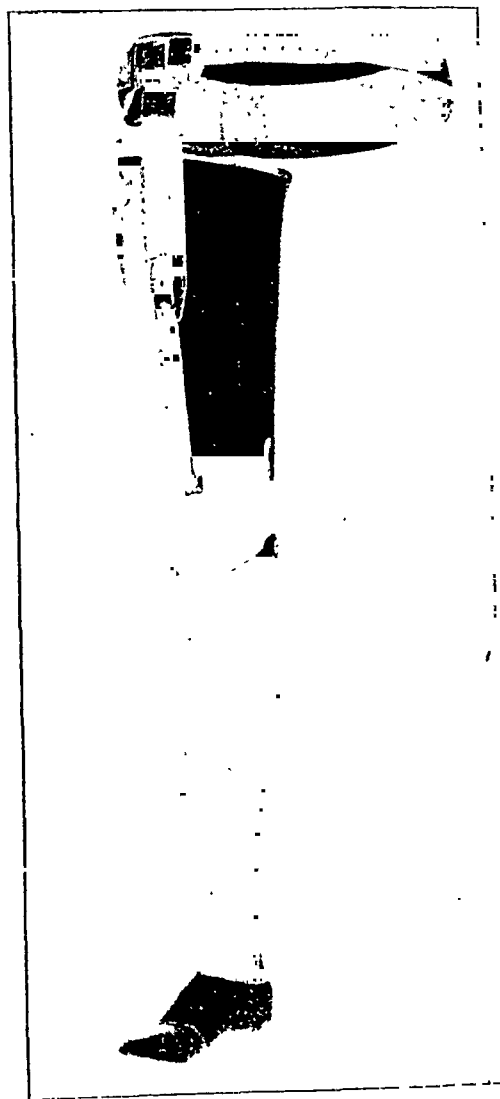


Fig. 2.—Conventional prosthesis for midhigh amputations. Weight bearing is carried almost entirely from the ischium. Note the "muscle strap" of leather and elastic which controls knee motion.

of emotional adjustment is made much easier for the patient if he realizes that the surgeon continues interest in the case even after the stump is healed and is willing to assume some responsibility in advising him concerning the permanent prosthesis and in supervising its fitting.

Personal acquaintance with the limb maker on the part of the surgeon and willingness to work in close cooperation with him inspire confidence on the patient's part and aid him in an otherwise difficult adjustment. The shorter the period between amputation and prosthesis, the easier the adjustment is likely to be. Unnecessary delay results not only in faulty psychologic adjustments and habits but in joint contractures and atrophy of the stump.

The skill and care with which an amputation is performed and unremitting attention to the postoperative care are tremendously important factors in hastening the time when the permanent prosthesis can be applied. The advantages of the temporary prosthesis in hastening the shrinkage and toughening of the stump have already been discussed by Major Thompson.

THE STUMP

The most important requirement for a comfortably fitting, efficient limb is a properly formed stump. Improperly placed operative scars, deficient or excess bone length, redundant muscle, tight skin flaps and exposed nerve ends all tend to make fitting difficult and weight bearing and locomotion fatiguing and painful.

CONSTRUCTION OF PROSTHESIS

The standard construction of an artificial leg usually consists of the (1) socket, (2) knee piece, (3) shin piece and (4) foot.

The socket is that portion of the limb into which the stump is fitted. It is usually constructed of willow or basswood, carefully cut out to fit the contours of the stump. The wood socket is covered with tightly stretched rawhide, which greatly adds to its strength. Leather and fiber are also used for the socket. Some metal and some plastic sockets have been made but are not in general use. Aluminum alloy makes a light and durable limb but is more expensive and is not readily available now.

The knee piece is an important control mechanism allowing knee motion with stability. The proper fitting

and alinement of the knee joint axis is of the utmost importance. Side joints at the knee are used in amputations below the knee. Should these joints be placed too far anteriorly, pressure will result in the popliteal space, causing edema of the stump. Stability and control of the artificial knee joint and the prevention of buckling, or "jackknifing," in thigh amputations are provided by various ingenious devices. It is not necessary to give a detailed description of all these mechanisms. Knee motion is usually controlled by a "muscle" strap of leather, with elastics on either end, which is attached to the pelvic belt and passes over a roller fastened to the shin piece inside the knee. As the knee is flexed, pressure is applied to the control strap pulling the shin piece forward for the next step. Knee joint control is also effected by the proper setting of the

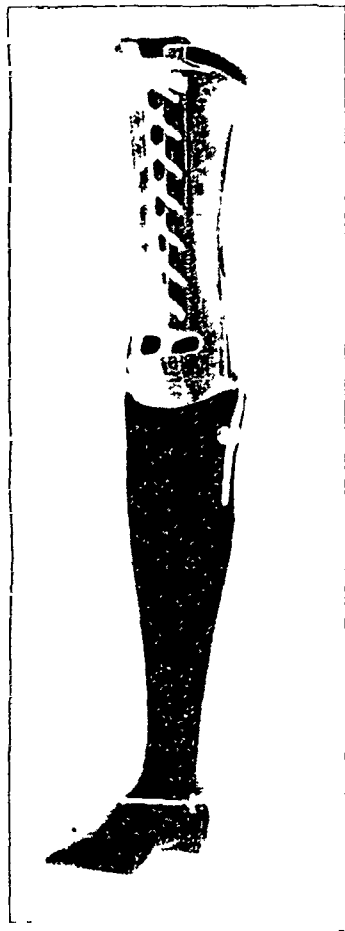


Fig. 3—Prosthesis for end bearing stump at the knee of the Gritti-Stokes or Rogers type.

joint axis. The farther posterior the axis is set the more positive is the knee lock when weight is applied.

The foot in most general use today is made of wood with a joint in the forefoot of rubber belting and with limited motion at the ankle. Rubber pads or bumpers

are placed in heel, instep and forefoot. The position and thickness of these rubber pads in the foot also affect the stability of the knee joint. Increasing the "fixed equinus" of the ankle by raising the front pad in the instep tends to throw the knee into hyperextension and increases knee joint stability.

COMMON TYPES OF
PROSTHESIS FOR
AMPUTATIONS
AT VARIOUS
LEVELS

End bearing stumps are successful only in the region of the ankle and knee. These amputations are very popular in Canada and, according to Gallie, are much preferred there to midcalf and midhigh amputations. They are not so popular in this country or Great Britain. Limb makers object to them because of difficulties in making a prosthesis that is comfortable and that conforms to the shape and length of the opposite limb. Another difficulty encountered with a prosthesis for the Syme amputation is preserving sufficient strength at the ankle to take care of the excessive strain when weight is borne on the ball of the foot.

In midcalf amputations the weight is borne largely on the sloping surfaces of the tibial condyles, avoiding pressure in the popliteal space. The stump should be fitted into socket with the knee slightly flexed, causing more weight to be carried forward over the anterior portion of the tibia.

With amputations through the knee joint of the Gritti-Stokes or Rogers type, weight is carried on the end of the stump and on the sloping surfaces of the thigh. The socket for such a stump is usually made of heavy leather with a front opening for lacing and with a felt pad on the end for weight bearing.

Weight bearing in thigh amputations is carried almost entirely from the ischium. Some weight may be taken on the sloping surfaces of the thigh, but all pressure on or near the end of the stump must be avoided. Undue pressure must also be avoided in the adductor region. Pressure boils in this area are common as the result of an ill fitting ischial seat. In this type of limb, suspension by a pelvic band with a joint at the hip and with direct stump control seems to be most generally favored, although some patients find shoulder straps preferable. The majority of limb makers recommend a rigid type of hip joint control with no lateral motion.

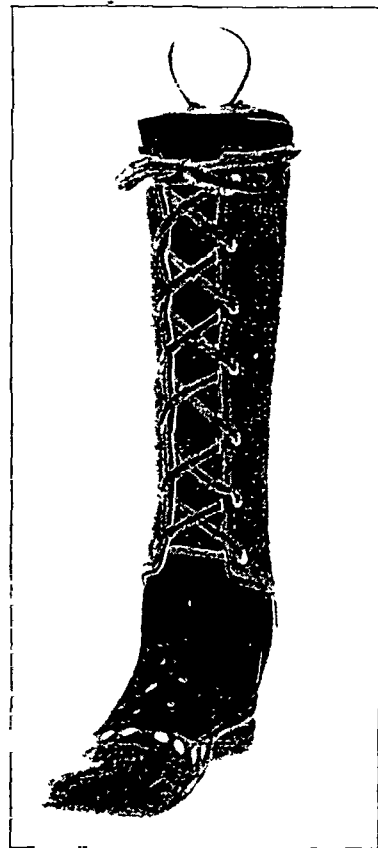


Fig. 4—End bearing prosthesis for the Syme amputation through the ankle.

Artificial limbs for hip joint disarticulation offer a difficult problem. If sufficient muscle about the hip is preserved so as to give a good seat, a conventional type of above knee limb with a saucer shaped socket can be successfully fitted. If the amputation does not permit this type of prosthesis, then a bucket type socket or a "tilting table" prosthesis must be used. A hip lock is always necessary with this type of appliance and in most cases a knee lock as well.

Fitting of Prosthesis and Care of Stump.—Careful fitting and alinement of the limb and instruction of the patient in its proper use are of utmost importance. The stump is protected by a woven stump sock of virgin



Fig. 5.—Conventional type of upper extremity prosthesis equipped with a mechanical hand, interchangeable with a utility hook, and controlled by straps from the opposite shoulder.

wool. One, two or more of these socks are worn, depending on the amount of shrinkage that takes place in the stump. The socks should be changed daily and kept scrupulously clean to avoid skin irritation or infection.

Upper Extremity Prosthesis.—The use of prostheses in amputations of the upper extremity is not nearly so satisfactory as is the lower. The successful wearing of such a prosthesis depends not only on the character of the stump but on the psychologic adjustment of the patient in learning to use it. The most successful prosthesis is that fitted to a short forearm stump and equipped with a mechanical hand, interchangeable with a utility hook and controlled by movements of the opposite shoulder.

CONCLUSIONS

It should be emphasized that in the successful fitting and use of prostheses not too much importance should be placed on the particular type of limb, materials used or certain special features, such as complex joint controls. The more important considerations from the point of view of both patient and surgeon are whether the socket properly fits the stump and whether the limb is well constructed and of proper alinement and length.

Success in the rehabilitation of a person crippled by the loss of a limb depends first on a well performed amputation with a stump of proper contour and length, and finally on the closest cooperation between the surgeon and a skilled, ethical limb maker in the selection and fitting of the permanent prosthesis.

1612 Tremont Place.

ABSTRACT OF DISCUSSION

ON PAPERS OF MAJOR GENERAL KIRK AND LIEUTENANT COLONEL MC KEEVER, COMMANDER WHITE, MAJOR V. P. THOMPSON, LIEUTENANT COLONEL T. C. THOMPSON, AND DR. THOMAS

LIEUTENANT COMMANDER HARRY B. MACEY¹ (MC), U.S. N.R.: There will be an immediate need for a great number of amputations in a late teen and early adult age of men—a group in which close relationship between the surgeon and the patient may play a most important part. In the military service the medical officer is looked on with respect and, at times, admiration, thus creating an ideal condition for encouraging early rehabilitation of the crippled serviceman from both a mental and a physical standpoint. The guillotine amputation with the operative procedure and postoperative care, the details of which are a result of much experience, need only to be followed to obtain good results. The clinical observations referred to in 150 amputations, including those on patients from all theaters of operations of the present war and performed under various conditions and by surgeons of varying experience and ability, are self explanatory and should be sufficient proof of the value of, and at times the necessity of, the guillotine operation. The article referring to the amputation stump from the prosthetic point of view should be carefully read by every surgeon and medical officer who anticipates that he might be called on to perform an amputation. In the elective midcalf or below-knee amputation, fixation of the fibula to the tibia, accomplished by roughening the lateral and medial aspects of the bone ends of the tibia and fibula respectively and transfixing the fibula to the tibia by use of a vitallium screw, will prevent the chance of a floating fibula, which at times detracts from the usefulness of the stump by its mobility. The use of the temporary prosthesis has not been sufficiently stressed in the past, but its advantages are manifold and should be routinely employed, especially in young amputees. An additional temporary prosthesis not offered in the symposium, but which may be used advantageously, is the use of a well padded plaster of paris socket attached to a crutch at the level of the amputation. This encourages early physical activity and mobilization in weight bearing of the recently amputated extremity. The opening statement in the discussion on pain after amputation and its treatment should serve as a warning to those attempting to relieve phantom pain unless they have a deeper insight into the subject than is generally understood. The list of nonbeneficial procedures suggested should be carefully reviewed so that useless procedures will be avoided. The only procedure which should be employed, save in the hands of one experienced in this field of surgery, is the single resection of a neuroma when it is shown to be indicated.

DR. PHILIP D. WILSON, New York: The number of amputations performed each year among the civil population of our country far exceeds that in the Army during the last war or

1. This discussion has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

the number that may be anticipated among our armed forces during the present war. The artificial limb manufacturers of the United States report that in 1942 they supplied limbs to approximately 70,000 civilians, whereas the total number of amputations in our army during World War I was about 4,000. There is, therefore, as much need for improvement of knowledge among surgeons and limb makers in time of peace as in time of war. War conditions, however, impose a different outlook on surgeons from those of peace with regard to how amputations shall be done. While the requisites of a good amputation stump remain the same, different methods must be employed to obtain them. In the combat zone, where surgery must often be done under primitive conditions and the patients must be evacuated rapidly over considerable distances to hospitals in the rear, it is obviously unsafe to suture wounds of any type, including amputation stumps. The same applies to amputations that are performed in the presence of infection, wherever they may be done. General Kirk and Colonel McKeever present sound arguments for the use of the guillotine method and they rightly emphasize the importance of skin traction in the after-treatment. The senior author treated many hundreds of amputations in the last war and no one is better qualified than he to give an opinion of the good results that may be achieved by these methods when properly used. I am in complete agreement with the conclusions of these authors and I would like to emphasize particularly the necessity of applying skin traction to the stump continuously from the time of amputation until healing is achieved. The most serious cause of interruptions of such treatment in the present war is the evacuation of patients from one hospital to another over long lines of communications, finally terminating in a voyage over seas. These difficulties should be overcome by the use of the Thomas splint to provide fixed points of traction and counter traction or if the patient is ambulatory by the application to the stump of a plaster bucket in which is incorporated a heavy wire frame to provide a point of fixation for the traction. Now that skin grafting is being employed so successfully for the early closure of granulating wounds, a word of caution is necessary about the use of this method to close amputation stumps. A skin graft will never tolerate the stresses caused by the use of an artificial limb, and excision of the graft with plastic closure of the skin will be required. But the application of the graft interferes with the normal process of scar contraction, which is relied on together with skin traction to pull the normal skin down over the end of the stump. Closure by skin grafting is therefore likely to result in greater difficulty for the surgeon when he attempts later plastic closure than when natural healing is allowed to take place. Continuous skin traction is a better method for obtaining healing than skin grafting and will require only a slightly longer period of time. There is no point of disagreement with Major Thompson. I would emphasize the need for judgment in choosing the level of amputation and particularly would point out the advantages of the Syme, Gritti-Stokes or tendinoplastic amputations when possible. These stumps are capable of direct end bearing and will stand heavier service with greater comfort to the patient than many other types of amputation of the lower extremity. Commander White considers the painful neuroma of little importance in causing intractable pain and gives chief attention to the surgical methods that attack the central nervous system at higher levels in order to obtain relief. Certainly all surgeons who have had experience in the treatment of painful stumps will agree that there are many cases in which pain persists even after the removal of all possible local or peripheral causes and where they have been at a loss how to give relief. In presenting the other surgical methods that may be used and the results that have been obtained, Commander White has made a real contribution. The discussion of temporary and permanent prostheses by Lieutenant Colonel Thompson and Dr. Thomas emphasizes the objective of all surgery, which is to produce a stump capable of optimum function with an artificial limb. Only the surgeon who is familiar with the construction and mechanical principles of these limbs is capable of doing this, but unfortunately many surgeons are called on to perform amputations in

an emergency who do not have this knowledge. It is their duty to familiarize themselves on these points in order that their surgery may not only save their patients' lives but give them utmost comfort in the years that follow. Finally I should like to express the opinion that the system of temporary prosthesis now being used by the Army, which was reported by Lieutenant Colonel Thompson, represents the best that can be done for our soldiers with amputations and is far superior to the peg legs fitted with plaster of paris sockets which were used so extensively during the first world war.

DR. J. ALBERT KEY, St. Louis: The guillotine amputation has stood the test of time as a saver of life and length of limb in military surgery. This is not a severance of the limb, such as would be made by a guillotine, but is one which leaves the fresh stump with a square end. When traction is applied to the skin this square end becomes a shallow funnel with the end of the bone at the bottom. This traction should be applied at the time of the operation and continued even during transportation if possible until the scar is well contracted and fixed to the end of the bone. This is especially important in short stumps. The amputation should be performed at the lowest level permitted by the viability of the tissues, and this applies to the hand and foot as well as to the cylindric portions of the extremity. The surgeon who performs the primary amputation saves the life of the patient, prevents spreading infection and saves as much of the extremity as possible. The surgeon who performs the secondary operation selects the level of the amputation and so fashions the stump that he gives the patient the best possible result. The final amputation or plastic closure of the stump is an operation which requires a high degree of surgical judgment and skill. Our Army has recognized this fact and has met the problem by establishing five amputation centers, in each of which the amputation service is headed by a surgeon who has developed the required judgment and skill. The patients are transferred to one of these centers for the final operation and the fitting of the prosthesis. At a recent conference on amputations by representatives from Great Britain, Canada and the United States the experiences of the armed forces were pooled for the benefit of all. The Canadians are partial to end bearing stumps (Stokes-Gritti and Symes). The English dislike long stumps on account of circulatory disturbances and use ischial bearing prostheses for most of their below knee amputations. I prefer a slightly longer stump and take most of the weight on the sides of the below knee stumps. Muscle and tendon plastic stumps are largely abandoned, and the end of the bone is covered only by skin and fascia. Excess muscle is excised and permitted to retract in order to give a conical stump. But in plastic closures on guillotine stumps the muscle should not be freed from the bone because this stabilizes the tissues and, as Col. T. C. Thompson has noted, often gives a better stump than is obtained by an elective amputation. Excessive tension on the skin flaps is to be avoided but, if unavoidable, can be neutralized by skin traction, which is continued until the wound is healed. The temporary prosthesis supplied by our Army is really an excellent artificial leg fitted by experts, and our patients are fitted and taught to use their limbs with as little loss of time as possible. Dr. Atha Thomas has emphasized the cooperation which should exist between the surgeon and the limb maker and has noted that the surgeon's responsibility is not ended until the patient is fitted with a satisfactory limb. Attention should be called to the facts that not only is the Association of Limb Manufacturers of America conducting a research program but its members have unselfishly pooled their patents in order that the best possible prostheses may be available. I can say little about postamputation pain except that it is now believed that the important nerves should be drawn down slightly and cut cleanly across and permitted to retract. Ligation, injection with alcohol or crushing of the nerve before cutting is discouraged. If phantom pains appear, it is possible that early injections of the peripheral nerves or of the sympathetic ganglions with procaine hydrochloride as recommended by de Takats and Miller (*Arch. Surg.* 46:469 [April] 1943) may prevent much later pain and disability.

CHRONIC MALARIAL PARASITEMIA IN
ITALIAN PRISONERS OF WARCAPTAIN STANIS P. CARNEY
SANITARY CORPS, ARMY OF THE UNITED STATESAND
CAPTAIN NOAH B. LEVIN
MEDICAL CORPS, ARMY OF THE UNITED STATES

The internment of prisoners of war has presented an opportunity to study under closely controlled conditions the incidence of parasitemia in a large group of men who have been returned from an area where malaria is hyperendemic to a malaria-free region.

The present study was initiated in a prison camp with a population of close to 3,000 Italian prisoners of war. About two thirds of these men came directly from the North African area. The remainder came from the same theater, but they had spent three months in another camp before being transferred here. All of them had seen service for varying periods in malarious regions, some as long as ten years, although the average was about two years.

It soon became apparent that malaria was going to be a problem of some concern in this camp, since immediately after arrival of the prisoners cases of malaria began to appear. The first question which arose was the problem of transmission of the disease to the uninfected prisoners, to the army personnel attached to the camp and to the nearby civilian population. This was satisfactorily answered by the results of two mosquito surveys made in the area in which the camp is located, one made by the state university and the other under the direction of the Seventh Service Command, in both of which no anopheline mosquitoes were found. As an added precaution, however, all men hospitalized for malaria were screened by mosquito bars after dusk.

The proposal to send some of the prisoners to work on farms in the region of the camp raised another question. Since, in many cases, side camps were to be set up, sometimes many miles away from army hospital facilities, it was decided to make an attempt to locate all men with parasitemia.

METHODS

Both thick and thin blood smears were made for each man, prepared with Giemsa stain. Thick smears were examined to determine the presence of malaria parasites, and when the number of parasites found was sufficient to make a search of the thin smears practicable these were studied to prove further identification of species. At least two smears, taken two or more days apart, were examined for each man. In addition, at the time the smears were taken every man was asked if he had ever had malaria.

RESULTS

The accompanying tables give a statistical analysis of the results. The breakdown by companies (table 1) has a certain value, in that part of the fourth company, together with the men in companies 5 through 8, came from the other camp, where a number of active cases occurred not included in these results. These men constitute one of three groups into which the camp might be divided, the others being the first four and the last four companies. The men in each group had

fought together and were taken prisoner at about the same time and in the same region. This may account for the fairly high percentage of positive smears in the first four companies as contrasted with the others.

The organisms of all the positive smears were identified as *Plasmodium vivax* except two each of *Plasmodium malariae* and *Plasmodium falciparum*. This agrees with the usually accepted fact that *P. vivax* is the type most likely to recur. Fifty-six cases of active clinical malaria have occurred to date, all proved by microscopic study. A number of recurrences has brought the total number of admissions for malaria to a somewhat higher figure. Thirty-two additional patients transferred from a general hospital overseas with a diagnosis of malaria are not included in the tabulated results since there was no evidence in their records of blood studies and no parasites were found in the blood here.

The onset of cooler fall weather was followed by a striking and abrupt cessation of admissions of men

TABLE 1.—Statistical Breakdown by Companies

Company	No. of Men	No. of Positive Smears	Percentage of Positive Smears	No. of Active Cases	Percentage of Active Cases
1.....	250	49	19.6	13	5.2
2.....	250	34	13.6	5	2
3.....	250	39	15.6	7	2.8
4.....	250	20	8	6	2.4
5.....	250	15	6	4	1.6
6.....	250	20	8	1	0.4
7.....	250	9	3.6	3	1.2
8.....	156	8	5.8	6	3.8
9.....	250	17	6.8	0	0
10.....	250	20	8	4	1.6
11.....	250	21	8.4	4	1.6
12.....	67	6	9	3	4.5

TABLE 2.—Summary Data

	Number	Percentage
Total number of men.....	2,723	
Men with positive smear.....	257	9.7
Men with active malaria.....	56	2.1
Men with history of malaria.....	188	6.9
Men with active malaria and no history.....	33	5.9
Men with positive smears and no history.....	212	8.3

with active malaria to the hospital. The blood smears from the seventh company were taken after this time, and, while only a small group is represented, it is felt that this is reflected in the low percentage of positive smears for those men.

A glance at table 2 will immediately make it apparent that a history of previous malaria was unreliable in this group. It will be noted that 59 per cent of the men with malaria gave no history of ever having had the disease before. A considerably higher figure, 83 per cent, of all patients with positive smears failed to give a history of previous attacks. In spite of the fact that most of these men seemed to know what malaria is like, it is probable that a greater number had had malaria in the past than would be indicated here. Repeated questioning of the hospitalized men sometimes drew out a history previously denied. Yet even after such persistent questioning, over half of the men with active malaria had no knowledge of past infection. While it is probably true that the same repeated questioning applied to all the men would have raised the number who admitted having had the disease, there would still be a large group who would persist in their denial of previous attacks. We do not suggest that the same situation will prevail with American troops. The language difficulty inherent in dealing with prisoners of war makes any such comparison of expected results

This work was done under the direction of the Seventh Service Command.
Lieut. Col. George F. Swanson, M. C., station surgeon at the camp investigated, gave all possible encouragement and assistance.

impossible. American soldiers, furthermore, are thoroughly schooled in the symptoms of malaria, and it is to be expected that they will have more insight for otherwise unexplained symptoms.

Included in the foregoing group are the men who were infected but who had no clinical symptoms until months later. According to their own statements, anti-malarial drugs are not used routinely in the Italian army for prophylaxis in endemic areas. Each man, however, is given a package of drugs to take at the first suggestive symptoms. It would appear, then, that drugs taken under these conditions may increase the incubation period to a much longer time than is usually considered customary and that clinical symptoms will not necessarily appear shortly after the intake of prophylactic medication stops.

It is admitted that this type of study will not find all the cases. At least 1 patient was admitted to the hospital with proved malaria only a week after his blood had been examined and found free of plasmodia. Five men with positive smears were selected at random for more complete study. Two of these eventually came down with clinical malaria; the other 3 never exhibited active symptoms. Smears were examined for these 5 twice a week, and at times parasites could not be demonstrated after the most critical search. In spite of the fact too that no man with active malaria was discharged from the hospital until two consecutive thick smears were negative, there were some recurrences.

CONCLUSIONS

1. Plasmodia may still be demonstrated in the blood months after evacuation from an area where malaria is endemic. In the group investigated this was found true for a fairly large number, aggregating almost 10 per cent.

2. It is possible to find parasites in the blood of a person even though he maintains that he has never had malaria. Where language difficulty is a factor, as with prisoners of war, this may operate to make the presence or absence of a previous history unreliable in selecting men who may have a residual parasitemia.

3. Malaria may be contracted with no symptoms of active disease until months after infection. This is probably particularly true when antimalarial drugs are taken prophylactically, and the symptoms will not necessarily appear when intake of the drugs ceases.

4. No expectation of the residual malarial rate of United States troops can be predicated from these figures. A great many of the Italians grew up in malarious regions and were exposed and infected long before their period of military service, while only a relatively small percentage of American soldiers come from areas where malaria is present in any degree at all. The antimalaria precautions taken for United States troops in the field also serves to keep the incidence of malaria down. An advice from the office of the Surgeon General of the United States Army indicates that the incidence of parasitemia in the absence of clinical symptoms for our returned troops is much lower than the figures reported here for the prisoner group. In spite of these differential factors, we feel that this study emphasizes the necessity for careful examination of blood smears for all personnel who have returned from areas where malaria is prevalent and the need for treatment to sterilize the blood in all cases of parasitemia. This will serve the double purpose of protecting the person from further attacks and of eliminating him as a carrier.

Clinical Notes, Suggestions and New Instruments

ACTINOMYCOSIS OF THE SUBCUTANEOUS TISSUE OF THE FOREARM SECONDARY TO A HUMAN BITE

LIEUTENANT ROBERT A. ROBINSON, MEDICAL CORPS,
ARMY OF THE UNITED STATES

In 1930 Henrici stated that "any suppurative inflammatory reaction which stubbornly resists treatment but tends to discharge continuously should lead one to suspect the possibility of actinomycosis."¹

In the medical literature there are only a few case reports of actinomycosis secondary to human bites.² Perhaps this scarcity of case reports makes one less prone to suspect actinomycosis when dealing with a chronic infection secondary to a human bite than to think of tuberculosis, osteomyelitis or a foreign body reaction.

This case is reported to emphasize the importance of considering actinomycosis as a possible sequela of a human bite.

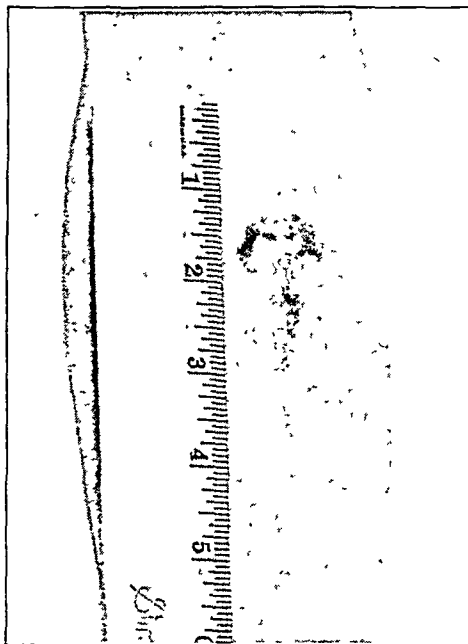


Fig. 1.—Surgical scar with pigmentation.

REPORT OF CASE

R. L. M., a man aged 21, admitted to the hospital March 26, 1943, was not acutely ill but complained of pain and swelling just below the elbow on the left forearm at the site of the human bite which he had sustained two and a half years before. His previous history was one of generally good health except for acute mastoiditis with mastoidectomy at 7 years of age, pneumonia at 8 and scarlet fever at 20. These illnesses had left no obvious disease of any system. Notable injuries were limited to the one which initiated the present illness.

Sept. 7, 1940, while playing volley ball, the patient sustained the human bite wound. He struck his elbow against another man's front teeth. Iodine was immediately poured over the two small tooth wounds, and the arm was bandaged.

Two days later a cellulitis developed in the left arm. A physician made a short incision connecting the two puncture wounds and sent the patient to bed. He received about 4 Gm of sulfanilamide a day for ten days. The arm was elevated, and wet soaks were applied. The cellulitis subsided and the skin wound healed, but the area remained slightly red, indurated and tender.

1. Henrici, A. T.: *Yeasts, Molds and Actinomycetes*, New York, John Wiley & Sons, Inc., 1930.
2. Cope.^a McWilliams.^a

One year after the original wound, during the second recurrence of a localized abscess in this area, a study of pus from the abscess failed to show tubercle bacilli, and x-ray changes of osteomyelitis or of a foreign body in the tissues were not found. No apparent attempt was made to investigate the possibility of actinomycosis.

Acute abscesses recurred at the site of the bite wound whenever it was bruised. These abscesses drained some watery pus and healed spontaneously. There was persistent induration and tenderness of the soft tissues in this area for two and a half years.

On March 23, 1943 the patient bruised the site of the chronic inflammation, and three days later he came to the hospital for surgical relief, no spontaneous drainage having begun.

The patient was 70 inches (178 cm.) tall, weighed 140 pounds (63.5 Kg.) and was of the asthenic habitus. The blood pressure was 115 systolic, 76 diastolic, the pulse rate 80 and the respiratory rate 20. The temperature was 97.8 F. The red blood cells numbered 5,200,000, the white blood cells 12,500, with 77 per cent polymorphonuclears, 15 per cent lymphocytes and 8 per cent monocytes. The Kahn test was negative, and the urine normal. The physical examination was negative except for the left upper extremity. There was a tender, hot, fluctuant, soft



Fig. 2.—Actinomycetes, $\times 100$ (U. S. Army Medical Museum negative number 76449).

tissue swelling measuring 3 by 2 inches overlying the proximal fourth of the left ulna. A $\frac{3}{4}$ inch scar at the site of the original wound lay transversely across the top of the fluctuant area. The surrounding skin was red, but the skin on the top of the abscess was pigmented, light brown and violaceous. X-ray examinations of this area were negative for osteomyelitis, periostitis, a foreign body and soft tissue calcification.

The abscess was opened with the patient under general anesthesia in the operating room, sterile technic being observed. Through a $2\frac{1}{2}$ inch incision in the long axis of the arm about 5 cc. of odorless grayish pus of milky consistency was evacuated, smeared and cultured. Digital examination of the abscess cavity revealed necrotic granulation tissue in which small yellow bodies about 1 mm. in diameter were noted. This tissue was fixed in alcohol. The periosteum and bone underlying the abscess were normal.

A dressing of sulfanilamide crystals and zinc peroxide paste, without packing, was applied to the wound postoperatively and almost every day for three weeks. The wound completely healed in four weeks and no induration, tenderness or heat was discernible in the area four months after the surgical drainage of the abscess. The infection had subsided for the first time in two and a half years. The only residuum was the pigmentation on each side of the surgical scar (fig. 1).

PATHOLOGIC FINDINGS

Microscopic examination of the pus showed no cocci or bacilli but many polymorphonuclear leukocytes and monocytes. The aerobic and anaerobic cultures of the pus were sterile after twenty-four hours and in ten days. It was concluded that the pus offered no clue as to the etiologic agent.

Macroscopic examination of the granulation tissue revealed small yellow specks, which were crushed, smeared and gram stained. This preparation of the sulfur granules demonstrated numerous gram positive, threadlike mycelia with axial filaments, true branching and clubbing about the mycelial tips. These slides were sent to the late Dr. A. T. Henrici, professor of bacteriology at the University of Minnesota Medical School, who reported: "I have examined the smear from R. L. M. and I believe there is no doubt that this is a case of actinomycosis. The smear shows the typical branched filaments of actinomycosis bovis."

The granulation tissue was sent to Letterman General Hospital, San Francisco, where it was sectioned and examined by Major Harold L. Stewart, M. C., pathologist, who reported: "The specimen of granulation tissue is composed of loose fibrous tissue, numerous dilated proliferating capillaries and many inflammatory cells. In one area there is a large, irregular felted mass composed of a granular and threadlike, basophilic inner portion and a well demarcated peripheral border. This peripheral border shows an inner basophilic zone and an outer deeply acidophilic zone which is characterized by the presence of clubbed mycelia. Diagnosis: Chronic inflammatory granulation tissue containing ray fungus compatible with actinomycosis" (fig. 2).

COMMENT

This patient had sulfanilamide, wet dressings, elevation of the left arm and bed rest, which controlled the acute cellulitis that immediately followed the human bite. But he was never given adequate drainage of the infected bite wound area until two and a half years after the chronic infection began. The tissues at the site of the bite wound were almost certainly devitalized by a strong chemical antiseptic immediately after the bite, and there was an acute purulent infection two to five days later. The measures used to control the cellulitis did not control the actinomycotic infection of the injured tissues.

The difficulty in culturing the pathogenic actinomycetes is well known, and our unsuccessful attempt to culture them from the pus is therefore not surprising and does not contradict the diagnosis.³ In this case the diagnosis of actinomycosis was made in the absence of other causative agents on the basis of the history and on the finding of the typical sulfur granules in the granulation tissue.

Cope and McWilliams each reported one case of actinomycosis following a human bite. Cope's case was similar to the one reported here.³ Following a human bite of the hand in the soft tissues between the first and second metacarpals, the patient developed a cellulitis which subsided on rest and elevation of the part. Subsequently a chronic inflammation developed in the area, repeatedly suppurating until after several months the lesion was adequately drained and the granulation tissue cleaned out. Actinomycotic granules were found in the granulation tissue. The lesion healed promptly and permanently after the adequate drainage.

In McWilliams' case the actinomycosis started slowly, after a tooth wound of a finger.⁴ This infection caused sclerotic and cystic changes in the underlying bone, and the chronic suppuration of the soft tissues discharged through several sinuses. At surgical exploration of this lesion the diagnosis of sarcoma led to amputation of the finger. Postoperative examination of the soft tissues revealed sulfur granules typical of actinomycosis. The bone changes were apparently secondary to the pathologic changes in the soft tissue, for no actinomycetes were found in the bone. No extension of the lesion subsequently occurred.

The actinomycetes are a large and important group of microorganisms that have a very labile morphology.⁵ The types that concern the agriculturist are aerobic, while most students of

3. Cope,⁸ Colebrook.¹⁰

4. McWilliams, C. A.: Actinomycosis of Phalanx of Finger, *Ann. Surg.* **66**: 117, 1917.

5. Wright, J. H.: Biology of the Micro-Organism of Actinomycosis, *J. M. Research* **13**: 349-404, 1904-1905. Henrici.³

actinomycosis have concluded that the anaerobic or microaerophilic *Actinomyces bovis* of the Wolff-Israel type is the usual human pathogen.⁶

The fundamental growth pattern of the actinomycetes is that of a fungus in which there is an axial filament with true branching. This pattern, under certain environments such as the human mouth, may be modified to a fragmented or bacillary form, as noted by Henrici and others.⁷

Pathogenic actinomycetes are most often recognized in tissue when their branching mycelia form typical clumps, or sulfur granules. In such characteristic colonies the mycelia have developed hyaline caps on their peripheral tips, and these caps or clubs give the sulfur granule its characteristic appearance.

The diagnosis of actinomycosis must not be made on the basis of sulfur granules alone, because other organisms, such as *Actinobacillus*, can form them too. However, if these sulfur granules, having been crushed, stained and studied microscopically, show basophilic axial filaments with true branching, actinomycosis is the logical diagnosis. Cope stated that from the clinician's point of view "both for diagnosis by smear and for cultural purposes it has proved necessary to isolate the actual sulfur granules from the pus and granulation tissue. Seldom were separate mycelial filaments found in the pus or was a growth of the organism obtained from random samples of pus."⁸

There are two general theories of the mechanism of human actinomycotic infection. The first is the exogenous theory. According to this one the ray fungus is conveyed to man from vegetable sources such as grasses and soil. It is true that actinomycetes are very plentiful in alkaline soil, but a convincing argument against this theory is the fact that actinomycetes found in soil and on grain are predominantly aerobic, while the human and animal pathogen is microaerophilic.¹ Furthermore, typical actinomycosis has not been produced in laboratory animals by aerobic actinomycetes obtained from vegetable sources.⁹

The second, or endogenous, theory of actinomycotic infection does not attempt to explain from what source *Actinomyces bovis* is originally conveyed to the human body but suggests that it is a normal inhabitant of the mouth and digestive tract.¹⁰ Crowley suggested that "they fill a role analogous to the organisms of Vincent's infection, which are present in the mouth without necessarily causing infection."¹¹ Sullivan and Goldsworthy think that "they lead a saprophytic existence in the mouth and invade the tissue only when conditions are rendered favorable, as by injury."¹²

Circumstantial clinical evidence which supports the endogenous theory is the coincidence of tooth extractions, particularly from pyorrhetic mouths, with the onset of cervicofacial actinomycosis.

The experimental support of this endogenous theory is recent work by Sullivan and Goldsworthy¹² and by Slack; also previous experiments by Lord, Naesland and others.⁹ Slack successfully reproduced actinomycosis in laboratory animals and concluded:¹³ "Anaerobic species of actinomycetes have been isolated from carious teeth, tonsils and pyorrhea pus and from the normal mouth. These organisms are not distinguishable morphologically from true agents of actinomycosis and they have similar cultural characteristics. . . . Progressive fatal experimental actinomycosis with sulfur granules was produced in 4 rabbits and 1 guinea pig inoculated with an anaerobic actinomycete isolated from pyorrhea pus."

SUMMARY

1. A case of actinomycosis secondary to a human bite was observed, and 2 similar cases were found in the literature.

6. Zinsser, H., and Bayne-Jones, S.: *Textbook of Bacteriology*, ed. 8, New York, D. Appleton-Century Company, Inc., 1939. Henrici.¹ Lord.⁹ Slack.¹³

7. Henrici.¹ Sullivan and Goldsworthy.¹² Slack.¹³
8. Cope, V. Z.: *A Clinical Study of Actinomycosis with Illustrative Cases*, Brit. J. Surg. 3: 55-81, 1915-1916.

9. Lord, F. T., in Cecil, R. L.: *Textbook of Medicine*, Philadelphia, W. B. Saunders Company, 1942, pp. 375-377.

10. Colebrook, L.: *Mycelial and Club-shaped Organisms Associated with Human Actinomycosis*, Brit. J. E. 1: 1, 1920.

11. Crowley, M. C.: *Isolation of Actinomycetes from Root Canals*, J. Dent. Research 20: 189-194, 1941.

12. Sullivan, H. R., and Goldsworthy, N. E.: *Comparative Study of Anaerobic Strains of Actinomycetes from Clinically Normal Mouths and from Actinomycotic Lesions*, J. Path. & Bact. 51: 253-261, 1940.

13. Slack, J.: *Etiology and Pathogenesis of Actinomycosis*, J. Bact. 43: 193-209, 1942.

2. Actinomycetes indistinguishable from the known pathogenic *Actinomyces bovis* have been isolated from normal and diseased human mouths by several students of actinomycosis.

3. Experiments show that actinomycetes from the human mouth can cause true actinomycosis in animals.

4. It is logical to suspect actinomycosis in any persistent inflammatory lesion which stubbornly resists treatment, especially if it is at the site of a human bite wound.

5. It would seem from the few cases so far reported that with adequate surgical treatment the prognosis in cases of actinomycosis secondary to human bites is excellent.

CONCLUSION

A human bite can transmit pathogenic actinomycetes and cause actinomycosis.

A PROCEDURE TO CORRECT FACIAL PARALYSIS

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Herein are presented the results of a method of improving the appearance of the face after loss of the facial nerve. For many years the standard procedure for correcting facial paralysis

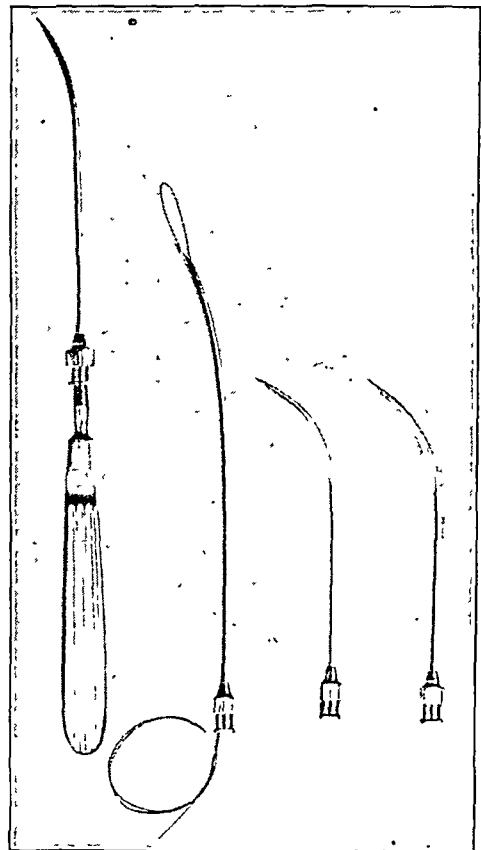


Fig. 1.—Assortment of hollow needles used for introduction of fascia. From left to right, a 12 cm. 11 gage (American standard wire gage) needle with removable handle. Second, a 14 cm. 10 gage needle showing wire loop used to grasp one end of a fascia strip. The two smaller needles, 10 cm., 13 gage, are used about the eye.

had been a spinofacial or hypoglossofacial anastomosis. The results were good but far from perfect. The advent of fascial strips slung from the temporal fascia to the lower and upper lips and to the lower eyelid produced results as good as if not better than the nerve anastomosis. However, each procedure left much to be desired. The nerve anastomosis never produced complete motor function in either the lower part of the face or the lower eyelid and, while in a certain percentage of cases there was automatic muscular control, in most instances the muscular activity was dependent on movement of the shoulder with spinofacial or of the tongue with hypoglossofacial anastomosis. On the other hand, with the fascial strips alone there was no motor activity and a complete absence of tone on the

affected side of the face. The procedure advocated here is a combination of the two procedures, i. e. the nerve anastomosis plus the fascial strips. The two are done at the same operation. The spinofacial anastomosis has been used exclusively. It is, of course, essential that the facial paralysis be of less than a year's duration; after that time return of motor function is not attainable. For paralysis existing over a year only the fascial



Fig. 2. Cerebellopontine angle acoustic tumor, right, removed Dec. 2, 1941. Spinofacial nerve anastomosis Dec. 13, 1941. A, appearance before fascial suspension on Nov. 28, 1942. The patient was able to move the muscles of the right side of the face by voluntary shoulder movements but there was scant relief of the paralysis at rest. B, condition eight days after fascial suspension.

strips are indicated. In a series of 17 cases so treated the facial paralysis resulted from the total removal of acoustic tumors in 7, from injury to the facial nerve during mastoid operations in 3, from the division of the facial nerve because of unbearable facial tic in three, and from a variety of injuries in 4.

The method of performing the spinofacial anastomosis needs no comment. It has long been a standardized procedure. We prefer the spinal accessory nerve to the hypoglossal because its loss is less obtrusive to the patient. Always one can be certain of return of motor power to the face because end to end anastomosis is made with intact nerves, i. e. without neuromas. The nerve suture is performed first because the field of operation is clean; immediately thereafter the fascial strips are implanted. In 17 cases only 4 were followed by any degree of wound reaction and in only 1 was there a frank infection. It is worthy of note that the latter case, treated with gramicidin, we consider to be one of our best cosmetic results.

The fascial strips were first introduced in this country for facial paralysis by Blair¹ and Brown,² who anchored them to the parotid fascia. Brown changed the anchorage to the temporal fascia and passed the strips into the temporal muscle, hoping for some resulting muscular activity. Although it is doubtful that this result is attained we have used this modification, feeling that at least the fixation to the temporal fascia is preferable. The fascial strips are carried across the midline of both the upper and the lower lips and looped through the sound muscle on the unaffected side. If the strips of fascia do not cross the midline they will not hold, and traction of the face will fail.

The temporal muscle flap with secondary attached fascial strips used by Gillies³ has been tried but with little if any

motor function resulting. However, it is not improbable that refinements of this method may yet bring better results.

Preliminary study of the face at rest and with the unaffected side in use will determine the most advantageous point on the paralyzed side at which to locate the nasolabial fold suspension. This point and the points on both upper and lower lips may be tattooed in the skin with a small hypodermic needle dipped in an alcoholic solution of brilliant green. These points will survive the most vigorous preoperative skin preparation and are of great value during the operation.

Anesthesia by intratracheal intubation through the nostril of the unaffected side supplies an airway and leaves the mouth clear for operative manipulation. Recently pentothal sodium has been used almost exclusively.

In obtaining fascia the Bateman stripper has been very satisfactory. It is essential that the longest possible strips be obtained to avoid splicing. It is probably preferable to anchor separately the two ends of the fascial loop from the upper and lower lips to the temporal fascia instead of carrying them through temporal muscle if this step requires a splice. Strips are cut about 1 cm. wide. Two or three may be obtained; they are cleared of any attached fat and split into smaller strips of about 5 mm. width; these are used for the suspension.

The temporal incision is only 5 or 6 cm. long and is placed within the hairline sufficiently posterior as to avoid any nerve fibers to the eyelids or frontalis; the incision ends at the zygoma.

The modified Reverdin needle devised by Blair is not always satisfactory. All too frequently its grasp of the end of the fascial strip is insufficient and necessitates repeated reintroductions with consequent trauma and possible contamination. A simple substitute is very effective. We have used large hollow needles 10 gage (American standard wire gage) and 14 cm. long, pointed and curved as shown in figure 1. To one end is attached a hub into which fits a removable handle. The handle facilitates its manipulation but is not necessary. This needle is introduced in the temporal incision, is pushed through the tissues of the cheek and emerges at one of the previously marked points, where a small stab wound is made. The handle is then removed and a loop of wire is inserted from above and appears through the needle point. One end of a fascial strip is placed in the wire loop, which is drawn backward until the fascia is tightly engaged against the needle opening. By strongly pulling the wire bearing one end of the strip, the needle



Fig. 3.—Appearance six months after the combined operation performed for facial tic. A, the face at rest. B, the facial response on voluntary movement of the shoulder.

and fascia are drawn into the temporal incision. The needle is then reintroduced in a parallel course and emerges at the same point, where it grasps the other end of the same strip and in so doing creates a loop of fascia around the orbital muscles of the sound side. Each of the stab wounds in the lips is closed by a single suture. Each end of the strip is now inserted deeply into and out of the temporal fascia and muscle by a Gallie needle, about 1 cm. apart, and tied. The knot is rein-

1. Blair, V. P.: Notes on the Operative Correction of Facial Palsy, South. M. J. 19:116, 1926; Further Observations on the Compensatory Use of Live Tendon Strips for Facial Paralysis, Ann. Surg. 92:694, 1930.

2. Brown, J. B.: The Utilization of the Temporal Muscle and Fascia in Facial Paralysis, Ann. Surg. 109:1016, 1939.

3. Gillies, H.: Experiences with Fascia Lata Grafts in the Operative Treatment of Facial Paralysis, Proc. Roy. Soc. Med. 27:1372, 1934.

forced with a silk suture and the ends are tacked down to the temporal fascia. The temporal attachment may be deferred until the strips have been similarly introduced to the remaining two points. Corresponding fascial ends should be clamped together for identification. The deformity must be appreciably overcorrected, almost to the limit to which the movable tissue can be suspended. The overcorrection has usually adjusted itself by the time the patient is ready to leave the hospital on the tenth day. The excess skin seen in long standing cases should be removed from in front of the ear.

The passage of the needle through the cheek is facilitated by guidance with the fingers of the left hand within the mouth. The use of gauze or preferably a cotton glove on this hand, at this stage, permits better control and avoids perforating the mouth with the needle. Rubber gloves are changed when the intraoral steps have been completed.

The passage of the needle should be midway between skin and mucosa. If too near skin, ridging and puckering result. If too near the buccal mucosa, the fascia may subsequently erode through from pressure against the teeth. The uppermost strip of the loop to the lower lip should be near the vermilion border; a deeper position causes eversion of the lower lip. The position of the parotid duct must be remembered.

Frequently a 3 mm. tarsorrhaphy at the outer canthus will be sufficient correction for a mild paralytic ectropion. If this condition is more severe the Kuhnt-Szymanowski operation or a fascial suspension of the lower lid, attached to the frontalis fascia as described by Blair, is preferable. The latter is done with a smaller hollow needle and wire loop, as described. A tendency toward a bowstring effect at the inner canthus is lessened by insertion of the fascia twice through the periosteum of the nasal plate by a Gallie needle.

The face is supported by a pressure bandage for a week and thereafter by collodion-gauze strips. Liquid diet and restricted talking are indicated for a week. We have given sulfadiazine by mouth in most cases for about five days, or until we are certain of clean wound healing. Similar precautions against infection are used before operation.

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STAPHYLOCOCCUS ALBUS OSTEOMYELITIS AND SEPTICEMIA TREATED WITH PENICILLIN

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This article describes the successful employment of the sodium salt of penicillin in a case of *Staphylococcus albus* osteomyelitis and septicemia, with a description of the technic employed, and comments on the side reactions when the drug was given intravenously and intramuscularly.

REPORT OF CASE

History.—B. M., a white man aged 29, a farmer, was admitted to the McKennan Hospital, Sioux Falls, S. D., on Oct. 10, 1943 with the complaints of weakness, chills and fever and also pain in the right hip. The history of the present complaints was that about three weeks before he took ill with chills, fever and sudden severe pain in the right hip. This completely disabled the patient and he took to his bed. He was given sulfonamides by his local physician with no results. During these three weeks he had steadily lost ground, and he was so weak that he was hardly able to move around in bed and had lost approximately 20 pounds (9 Kg.); he also complained of pain in his muscles and bones and he had headaches.

The immediate past history was that he had contracted a sore throat and he thought he had the "flu." The more remote past history is of no consequence.

Physical Examination.—On entry to the hospital and when first seen by me, the patient appeared acutely ill, toxic and extremely weak. The chief complaint then was pain in the right hip, weakness, chills and fever. The eyes, ears, nose and throat and the heart and lungs were normal. The blood pressure was 110 systolic, 70 diastolic. The pulse ranged from 80 to 110 and the temperature from 101 to 103 F. for the first thirteen days. There was no evidence of cutaneous or subcutaneous lesions at this time. There was no generalized adenopathy.

The liver was not palpable. The spleen was palpable and somewhat enlarged. The patient was emaciated.

The right leg was flexed at the knee and in abduction and was extremely tender on palpation and on pressure over the upper third of the femur.

The urine was normal. Examination of the blood revealed hemoglobin 72 per cent, red blood count 4,160,000 and leukocytes 6,400, with polymorphonuclears 58 per cent. Several blood cultures were made which revealed a growth of *Staphylococcus albus* in great profusion. No other organisms were ever found in the blood cultures.

X-ray examination revealed a definite area of bone necrosis in the upper third of the right femur.

Clinical Course.—The patient was first given large doses of sulfadiazine, which did not seem to benefit him at all. This medication was continued for four days and then it was changed to sulfathiazole, which was continued up to November 4 without any apparent benefit. On November 1 the patient was given a blood transfusion, which did not seem to do him any good except to pep him up somewhat. Blood cultures were positive for *Staphylococcus albus* throughout this entire period. All this time he complained of pain in his bones, hips, chest and ribs, and he was hardly able to cat. He was extremely depressed. He was losing ground rapidly.

On November 1 it was noticed that on both legs, the abdomen and the arms there had developed approximately 40 subcutaneous lesions about the size of a pea or a small lima bean. These were painful and bluish red. One of these lesions was opened and, although there was no pus present, on direct smears staphylococci were found, and cultures made of this lesion at the same time revealed a pure growth of *Staphylococcus albus*.

On the evening of November 4, seventeen days after his entrance to the hospital and thirty-eight days after the onset of the illness, 500,000 Oxford units of penicillin was obtained in the form of the sodium salt. He was given that same evening 49,000 units dissolved in 1,000 cc. of isotonic solution of sodium chloride. This was given over a period of seven hours by the intravenous drip method. The following day the temperature dropped to normal and the patient felt better. He stated that he had a feeling of well being and felt much improved; however, this might have been purely psychic, since he was told that this medicine would probably cure him.

This method of treatment of giving him 49,000 units of penicillin was followed for three days, and it was noticed that the subcutaneous lesions had disappeared within three days and the right femur felt much better; that is, there was no pain on pressure. However, following each injection the temperature would range from 102 to 106.4 F. orally, but the pulse rate would not exceed at any time 90 per minute. This drastic elevation of temperature was not preceded by a chill, and he did not feel at all ill through these periods of elevation of temperature, which lasted for about one-half hour or so and then would subside to 100 F. or below.

On the fourth day he was given the same dose of penicillin within twenty-four hours; it was divided into two doses every twelve hours. This method was continued for three days, and this was not followed by such severe reactions, since only once did the temperature rise to 104 F. and on other occasions rose only to 100, 100.6 and 101 F. It was thought that these febrile reactions were due entirely to the intravenous administration of the drug, so it was decided to give the penicillin intramuscularly every four to six hours in doses of 7,000 to 14,000 units. This was done for the next four days, when the supply of penicillin was exhausted. At no time after the intramuscular route had been decided on did he have any temperature above normal. On the other hand, the temperature from then on varied from 96.5 to 98.6 F., and the patient's condition was greatly improved. His appetite increased and he gained in weight. The subcutaneous lesions had entirely disappeared, and the tenderness in the right femur had disappeared. Blood cultures taken daily following the inception of the penicillin therapy at no time revealed any bacterial growth.

Dr. N. J. Nessa, roentgenologist, reported on November 10 that the right femur showed an apparent calcium deposit in the formerly reported osteolytic area.

On November 18 the patient was allowed out of bed and he walked, feeling well and desirous of going home. On November 19 he was dismissed, feeling well. He had but little complaint of pain in the right hip. He has been seen by me and checked over on three occasions since dismissal from the hospital. The last time was on Jan. 4, 1944, and he felt fine and wanted to go back to work. He had no complaint whatever.

COMMENT

This being the first case in which I have employed penicillin therapy, I feel that the results obtained, to say the least, were miraculous. The patient improved almost instantly and declared that he had a feeling of well being. The febrile reactions in this case, in all probability, were due to pyrogenic substances that were in the penicillin. When the penicillin was given intravenously, violent febrile reactions were obtained, but when it was given intramuscularly these febrile reactions did not occur.

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Special Article

ECONOMICS OF OBSTETRICS

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At no time in medical history has the economics of obstetric care been of greater importance than at the present. Preserving maternal and infant life and decreasing maternal and infant mortality are vital to the continuation of our nation in the face of the destruction of life wrought by the war.

WHAT BARRIERS TO BETTER OBSTETRIC CARE?

Generally, the barriers to better obstetric care are pictured in glaring statistical terms of which the following are samples:

Nearly a quarter of a million women do not have the advantage of a physician's care at the time of delivery (Inter-Departmental Committee).

Fifty per cent of the mothers who die in childbirth in the United States die needlessly through ignorance, negligence or lack of adequate care (National Committee on Maternal Health).

Physicians estimate on the basis of experience that one half to two thirds of maternal deaths are preventable, that the still-birth rate can be reduced possibly by two-fifths and that deaths of newborn infants can be reduced at least by one third and probably by one half. This would mean a savings each year of more than 70,000 lives (Technical Committee on Medical Care).

Regardless of the strict accuracy of such claims, their purport has been driven home to the public.

A threefold attack on the problem of better obstetric care is usually recognized:

1. *Medical*.—Raising the quality of medical care through better training, postgraduate education and the discovery of new drugs.

2. *Educational*.—Education of prospective mothers, early selection of a competent physician and public cognizance of good medical legislation.

3. *Economic*.—Better economic status of patients, basically increasing incomes and improving housing, food and clothing as well as the means and method of procuring good care.

The problems in the medical and educational fields are cheerfully referred to those who are competent to deal with them. The problems in the economic field can only be sketched in outline in this paper.

COST OF OBSTETRIC CARE

What about the cost of obstetric care? One of the items on medical society fee tables from earliest times to the present has been the fee for normal delivery. In studies of medical society fee schedules by the Bureau of Medical Economics of the American Medical Association,¹ which I participated in, out of 384 schedules collected in 1934, 360 listed "normal delivery, one child" with the median average of \$25 for the service. Next to home and office visits, this obstetric fee was the most frequently listed item. Out of 539 schedules collected from 46 states in 1937 a total of 491 schedules gave the charge for "normal delivery, one child" with the median minimum fee again at \$25. Maximum fees for delivery were given by 105 schedules with the median at \$50. Clearly the prevailing charge for the basic obstetric service of normal delivery is around \$25.

Whether antepartum and postpartum services were also included in this prevailing fee was not clear, but generally the stated fee appeared to be for delivery only. However, in many cases the minimal fee was considered inclusive of complete antepartum and postpartum care. In fee schedules especially for welfare or indigent cases (established by medical societies in conjunction with county or state relief plans) confinement care is provided for fees of \$15 to \$25. Occasionally the services for such charges are limited to

Benefit Basis

	Medical Service Plan	Surgical Benefit Plan
Antepartum services:		
First visit (minimal physical).....	\$ 5	{ No benefit; services payable by patient
6 visits up to 7th month at \$2.....	12	
4 visits during 8th and 9th months at \$2	8	
Delivery:		
Delivery, including two weeks' after care	40	\$10
Postpartum services:		
2 visits, 4th to 6th week, at \$2.....	4	{ No benefit; services payable by patient
Additional services:		
10 urinalyses at \$1; 2 Wassermann or Kahn tests at \$1; differential blood count at \$2 and complete blood count at \$4; minimal charge of \$18	18	
Total benefit.....	\$87	\$10

delivery with three antepartum and postpartum visits. As charges for medical care of indigents are generally scheduled at 50 per cent of the prevailing charges, a fee of \$30 to \$50 was apparently considered appropriate for relatively complete obstetric care.

The determination of a charge for medical services such as home delivery is not subject to cost analysis. Custom, the chief factor in establishment of medical fees, is especially prominent in the fixing of fees for obstetric service. From midwifery (1750) to parturition (1836) to confinement (1900) to obstetric delivery (1930) the fee has been approximately the same.

EVALUATION UNDER MEDICAL SERVICE PLANS

The problem of reaching general agreement among physicians on the evaluation of medical service is particularly apparent in the development of prepayment medical service plans. The traditional "sliding scale" of fees, by which charges are varied according to the patient's ability to pay, has formed extremely heterogeneous ideas as to the proper charge for a service. Yet in actual practice there is a surprising uniformity of charges. Fees for usual services such as obstetric

delivery do not vary except in broad social-economic groups such as (1) indigent, (2) middle class, (3) wealthy. Persons in the middle class, which constitutes at least 70 per cent of the physician's clientele, are usually charged about the same fee, especially in urban areas where the income status of the patient is not well known by the physician. It is the impact of this changing relationship between physicians and patients that is bringing greater attention toward methods of prepaying or financing medical charges.

A review of schedules of payment for obstetric services under prepayment plans sponsored by medical societies indicates that a fee of about \$40 is established for the low income group, that is, those above the indigent subsistence level but below the comfort level of \$2,500 annual income per family. Persons enrolled whose income is above this limit are obligated to pay the physician's additional charge, if any. Likewise all antepartum and postpartum services are paid by the patient. In some few plans providing full medical services (antepartum and postpartum visit fees plus charges for urinalyses and blood studies in addition to the delivery) the payment amounts to at least \$87. The benefit basis for one such plan is given in the accompanying table. Providing benefits under the extended medical plan only for services actually rendered was believed an inducement to more complete obstetric service. Some plans limit the benefit for the complete confinement care to a flat amount such as \$50 without regard to the amount of service rendered.

WHY AN ECONOMIC PROBLEM?

On the surface it would appear that the relatively low fee of about \$25 for obstetric delivery would not cause any economic problem except for indigents. However, the depth of the problem is indicated by the fact that prepayment plans offering \$40 for delivery alone with the patient to pay for antepartum and postpartum services, or even the \$85 payable for complete care under medical plans, still cause general disquietude among physicians. Underlying is the question of differential fees for services of obstetricians as compared with general practitioners.

The level of fees charged by specialists in obstetrics is not generally recorded, but some evidence, from bills rendered patients under hospital and medical service plans, indicates that \$100 would be the prevailing charge to patients in the middle class group. There is no disputing that the services of an obstetrician for complete confinement care of patients in this group is properly valued at \$100 to \$150 in comparison with the minimal services so frequently rendered in general confinement care for charges of \$25 to \$50.

The problem is to assist more and more patients to obtain services such as rendered by obstetricians. Or, to state it more exactly, a place in the family budget should be made for more adequate obstetric care, thereby making possible the support of more fully trained obstetricians or more complete care from well trained general practitioners.

An interesting sidelight on the ability of patients to obtain the services of obstetricians is shown in a tabulation of the type of practitioner performing the first 1,220 deliveries under Michigan Medical Service, a prepayment plan sponsored by the Michigan State Medical Society. Of these deliveries only 12 per cent were performed by physicians limiting their practice to obstetrics. On the other hand, 84 per cent of the deliveries were performed by general practitioners.

Worthy of note is that the remaining 4 per cent of the deliveries were performed by specialists limiting their practice to a particular field other than obstetrics! Even when the bill is paid, patients obviously still wish to obtain services from physicians they know and in whom they have confidence rather than from practitioners who may have greater technical skill. Furthermore, there are too few obstetricians to care for more than a fraction of all deliveries. With less than 1 per cent of physicians, or a total of 1,700, limiting their practice to obstetrics and gynecology, it would be rather remarkable for them to take care of more than 12 per cent of the deliveries. With only one obstetrician-gynecologist for approximately 80,000 persons, each such specialist would have to perform about 1,600 deliveries annually to render all obstetric service. There is a larger group, constituting about 4 per cent of the total number of physicians, or some 6,800, devoting special attention to obstetrics and gynecology. However, it is apparent that the majority of normal deliveries will have to continue to be performed by general practitioners.

There are, of course, other expenses such as hospitalization, nursing and layettes which build up the economic problem of obstetrics. One study of what parents paid for 540 babies² reported an overall average cost of \$110, ranging from \$270 where parents are in comfortable circumstances (above \$3,000 annually) to \$129 for those earning \$1,200 to \$3,000 and \$64 for those less than \$1,200. The highest cost was \$692.

It is undoubtedly the fact that total expenses in connection with obstetric care run into three figures, which focuses emphasis on the charge by the physician.

Much attention has been given to alterations in the present system of distributing and paying for medical care. However helpful such proposals may be toward meeting the cost of actual medical care, no amount of change in the present system of medical practice will affect the really basic economic problem of sufficient income to make possible an adequate standard of living—food, housing and clothing as well as medical care. The direct approach of bolstering individual and family incomes is apparently too simple for social reformers. However, it must be granted that there are real impediments to overcome before all workers' incomes can be increased so they can afford a higher standard of living. Yet, the furor over socialization of medicine as a palliative means of improving the distribution of medical care should not be allowed to obscure the plain fact that the common living essentials such as food and housing and economic security are frequently more vital to good health than medical care. When experiments such as those in England show that improvements in the nutrition of expectant mothers reduced maternal mortality by almost one-half that existing among a control group of mothers not receiving additional food, the prospects of improving the distribution of such an essential should not be forgotten.

One aspect of maternal mortality where medical science is perhaps overshadowed by economics is that of maternal deaths due to abortion. It has been fairly authentically determined³ that 3,300 maternal deaths, 35 per cent of all maternal deaths, are due to abortion. The medical causes and possibly correctives of abortions have been extensively catalogued and analyzed. The

2. Mark, M. L.: What 540 New Citizens Cost in Columbus, Survey Graphic 16: 386 (Jan.) 1930.

3. Dunn, Halbert L.: Vital Statistics—Special Reports (1941), United States Department of Commerce, Bureau of the Census, 1943, vol. 15, p. 431.

somewhat more basic economic factors such as poor nutrition, improper housing and overexertion in connection either with housework or with work in the office or factory cannot be as readily diagnosed or treated. These economic conditions perhaps in conjunction with a nervous-mental burden of unplanned pregnancies can overcome even the best obstetric care. Coupled with the fact that under such circumstances medical attention is too frequently delayed or not obtained, it is remarkable that the death rate because of abortion is not greater.

The medical profession is currently struggling with the question of child spacing. On the one side is a group of physicians who, perhaps because of religious belief or age, are unalterably opposed in their thinking to any condoning of artificial contraception. On the other side is a group of as equally distinguished physicians who urge dissemination of contraceptive information and devices. Because of moral implications, artificial contraception will probably always be a controversial subject. However, prominent physicians and church leaders have agreed that the natural rhythm method (Ogino-Knaus) of child spacing can be effectively utilized. Further substantiation of the scientific-medical basis of the rhythm method may be desirable, but it is believed that a simplified visual method of calculating rhythm periods is more acutely necessary before wide usage of this method will be possible. Undoubtedly the effect of child spacing on the underlying socioeconomic problems would help to overcome pregnancy wastage shown by the large number of stillbirths, neonatal deaths and abortions and would also help to reduce maternal mortality and morbidity.

With the large number of women now employed in war industries it is hoped that the economic factors of obstetric care will receive more proportionate attention. No really valid criticism can be maintained against the medical progress toward better obstetric care. Further progress awaits the development of the educational and economic factors connected with obstetric care.

MONEY VALUE OF HUMAN LIFE

A digression into the realm of so-called higher economics may be of interest. There has been considerable general speculation on the value of a human being. Usually these speculations end with the much quoted calculation that the chemical elements of the human body are valued at 69 cents. Most economists have hesitated to give any estimate of the money value of man. Some have taken the position that people are not to be counted as wealth because they are the reason for which wealth exists. Others incline to the position that human values should not be included in national wealth because the average lifetime consumption of a person approximately equals his production. A third class omits all approximations of human life values because of the difficulty of any accurate statistical measurement. However, there are economists who maintain that human life should be valued in cash to give a realistic picture of the total economic structure of a nation.

Placing a money value on human life is also desirable to give a commonly understood expression to the savings possible through conservation of life. Avoiding metaphysical or sentimental ideas, the economic value of an individual is measured by his earnings as a productive worker during his lifetime.

The only recognized economists who have attempted a cash estimate of human life have been Alfred Marshall

and Irving Fisher. Marshall's estimate of \$2,700 applied to Englishmen in 1895. Fisher's estimate of \$10,000 for Americans was made in 1910. In the insurance field the value of life is closely related to the present worth of future earning. On this basis, Dublin and Lotka⁴ estimated the value of a child at birth from \$3,000 to \$16,050, depending on the income class of maximum earnings. There are other money values placed on human life, such as prices paid for slaves ranging from \$21 to \$2,000 and court awards for death damages ranging from \$1,500 to \$70,000.

Using the discounted value of net future earnings (that is after deducting the expenses of raising a child) for the median income of \$2,000 annually, it is fairly accurately estimated that the value of a child at birth is \$9,000 and at 21 years of age \$30,000.

Relating these valuations of human life to obstetric fees, it can be seen that the charge for delivery is only $\frac{1}{3}$ to $\frac{1}{2}$ of 1 per cent of the value of the child at birth. In relation to the value of the lives of both the mother and child, the obstetric charge is only $\frac{1}{10}$ of 1 per cent. The tremendous importance of decreasing maternal mortality purely from the economic point of view is evidenced by the fact that each year about \$250,000,000 is the value of maternal lives lost. Likewise the savings possible through decreasing infant mortality could amount to \$1,600,000,000. The assets of the United States are too commonly measured in terms of factories, lands and minerals. The greatest assets are the men, women and children. In fact, human beings are to be valued in terms of productive capacity at five times the value of all the material assets of the nation—including the recent valuation made by Mr. Ickes.

All this indicates the key position that good medical care and especially good obstetric care plays in the economic status of the nation.

GOVERNMENT PROGRAMS

Increased attention to medical service, especially maternal care, as a field for organized action on the part of government agencies is apparent. The acceleration toward more government participation in payment of medical services began with the appropriation of \$22,200,000 for Health and Welfare Service under the Social Security Act, of which \$5,820,000 was specifically for maternal and child health. In a sense, the old Shephard-Towner Act of 1921 bringing the use of federal funds into the field of maternity and infancy was renewed—after a two year revival—in 1927. This time the allotment of federal funds for maternal and child care was firmly entrenched under the supervision and control of the Children's Bureau.

Total government expenditure for health, including state and federal funds, is placed at \$706,900,000 for 1941 by the Social Security Board,⁵ which amount is 11 per cent of the total Social Security and related programs. However, this is an understatement of government outlay for health, since expenditures for medical care incidental to other programs such as those in connection with Army, Navy, Education and Farm Security Administration are not included. Of this huge governmental medical financing, \$9,300,000 is especially allocated for maternal and child health services.

With the policy of grants-in-aid established, there is little likelihood that state legislatures will abandon use of federal funds available when combined with state

4. Dublin, L. I., and Lotka, A. J.: *Money Value of a Man*, New York, Ronald Press, 1930.

5. *Social Security Year Book*, Federal Security Agency, Social Security Board, 1941, p. 37.

funds. Under such a pattern for distributing payments for medical services, it seems that the medical profession would be well advised to devote attention to professionally sponsored agencies for administering these medical funds. This is almost as important for the good of the patient as the scientific methods of diagnosis and treatment.

It is of particular significance that the most recent extension of government payment for medical care was to pay for the obstetric-pediatric care of wives and children of servicemen in the fourth (\$78 per month) to the seventh grades (\$50 per month). An appropriation of \$4,400,000 for this purpose has been granted to the Children's Bureau for the fiscal year ending June 30, 1944. Another appropriation bill, H. R. 2041, is designed to continue this obstetric-pediatric program for the duration and six months after the war with an annual appropriation of \$6,000,000. However, the plan of paying for obstetric care of the wives of servicemen was quietly started under the Maternal and Child Health program of the Children's Bureau on request from state health agencies. From August 1942 to February 1943 over \$390,000 was expended for this purpose. Already forty-three states and territories have programs approved by the Children's Bureau under the new separately financed program. Between March 1943, when this program started, and August 1943, 29,910 soldiers' wives had received "free maternity care." Payments, which are generally administered through state health departments, provide \$25 for delivery, \$10 for antepartum care and laboratory, and \$5 for postpartum care and laboratory, or \$40 for confinement. A like sum of \$40 is payable for hospitalization. Approximately 5 per cent of all births, or at least 70,000 annually, are expected by the Children's Bureau to be cared for under the program.

In several states the medical profession has pointed out that payments for this purpose should be added to the servicemen's family allotment, thereby eliminating the need for a new fund distributing agency of the government. Another concern of the medical profession is to keep the determination of the amount of fee for the service an individual matter between the patient and the physician. Hence the request that payments be made to servicemen's wives as supplemental funds. However, the payment is allowable only on receipt of obstetric-pediatric care, and the Children's Bureau apparently considers the wives of all servicemen below the rank of a commissioned officer eligible for the care with the entire payment to be made from government funds at the stipulated fee.

Here again is need for a professionally sponsored agency to handle the administration of funds for medical care. Note in particular that plans for this program were to be developed and administered by state health agencies. Fortunately there is some tendency for even federal government proposals to take the shape of furnishing necessary funds with the distribution of payments and arrangements for medical services by voluntary nonprofit agencies. For example, the Farm Security Administration has so financed 1,044 medical care programs which provide service, including obstetric care, for 613,054 persons through voluntary and usually medical sponsored and administered agencies. Likewise the National Resources Planning Board proposals for extension of Social Security stress financial aid to states through cooperation with the medical profession

in plans to help patients pay medical expenses on a budget prepayment basis. This program has been translated into proposed legislation by the Wagner-Murray-Dingle Social Security Bill (S. 1161 and H. R. 2861), which grants the Surgeon General authority to negotiate both the method of payment and the fees with private agencies.

There is no question about the magnitude of the decision facing the medical profession on the economic front. Two courses are open: (1) to oppose use of government funds in medical care except for care of the indigent sick; (2) to accept use of government funds in medical care for those above the indigent level provided the medical profession has full voice in decisions concerning the distribution of such funds.

From the economics of the problem, it is my conclusion that such funds should be used under sound plans sponsored by the medical profession.

VOLUNTARY PROGRAMS

The turning of government from the provision of actual medical service to programs whereby the funds are furnished by government with the distribution of payments and arrangements for service made by private agencies is primarily due to the growing success of voluntary nonprofit prepayment plans. Such plans organized on a state or regional basis, under sponsorship of the medical profession, permit payments to all qualified physicians and endeavor to let the subscriber receive medical service in essentially the same manner as prior to organization of the prepayment plan.

There are thirty-three such plans in operation in fifteen states providing services for more than 750,000 persons. Similar plans are being proposed in twenty-one areas in sixteen other states. Likewise there is a plan in Hawaii (it survived Pearl Harbor) and four in Canada. A Medical Service Plans Council for these plans has been formed to coordinate and stimulate an exchange of administrative and statistical experiences.

Continued expansion of voluntary plans, both hospital service and medical service, is becoming of ever greater significance to the private practice of medicine—especially obstetric practice. Conversely, the importance of obstetrics to prepayment plans is indicated by the statement of an actuary of a large hospital service plan that "maternity utilization is the best single index of the financial condition of a hospital service plan." The same is also true for medical and surgical service plans. Under such plans, maternity cases (including complications of pregnancy, childbirth and the puerperium as well as deliveries) rank first in number and in cost.

Most medical service plans have striven to lift the quality and quantity of obstetric care by providing a fee which would encourage more adequate care from general practitioners and yet fairly recompense the obstetrician for his services. Even under the limited surgical plans the delivery fee of \$40 assures the general practitioner more than the average for complete care. This, with the opportunity for some additional payment by the patient for antepartum and postpartum care, should give an impetus for even more adequate care. Likewise the \$40 delivery fee does not prevent the obstetrician from receiving proper recompense of \$100 to \$150 for his extensive care.

Some plans specifically provide a higher fee for physicians who limit their service to obstetrics but may

provide that the patient must be referred by a general practitioner before the case can be considered as warranting a specialist fee. An accompanying provision is that no payment will be made to a specialist for services outside his field of specialization. Where these or similar arrangements under medical society sponsored plans are formulated by committees of physicians thoroughly familiar with the professional problems involved, it is surprising the amount of heat that is generated by practical application under a functioning plan. Nevertheless, medical societies should be able to develop a workable plan which will win the support of the majority of physicians.

The obstetric-gynecologic experiences under the Surgical Benefit plan of Michigan Medical Service gives an interesting picture of the possibilities of prepayment. For an average cost of 61 cents a month per person (60 cents for single subscriber, \$1.60 for two persons and \$2.25 for family including all children up to 18 years) the subscribers are entitled to practically unlimited surgical and obstetric procedures for hospitalized conditions. Participating physicians render these services without additional charge beyond the payment by the plan if the subscriber's family income is less than \$2,500 annually. Subscribers with greater incomes are obligated to pay the physician the difference, if any, between his usual charge and the payment from the plan. The benefits paid by the plan are fully equivalent to the prevailing charge for the service. As examples: delivery, \$40; cesarean section, \$100; ectopic pregnancy, \$125; perineorrhaphy, \$50; rectovaginal fistula, \$100; dilation and curettage, \$25; hysterectomy, vaginal \$125, abdominal \$150; oophorectomy, \$100; ovariectomy, \$75, and salpingectomy, \$100.

On the basis of several years of operation representing over 3,500,000 member months of experience, the following points seem to be confirmed:

Obstetric services (including normal delivery, cesarean section, ectopic pregnancies and miscarriages) are required by 20 per cent of the patients and represent 19 per cent of total payments.

Normal deliveries at 24 per thousand subscribers annually is about $1\frac{1}{3}$ times that for the general population.

Average obstetric payment is \$42.50 including, besides the \$40 payment for normal delivery, payments for cesarean and ectopic operations.

Frequency of obstetric and gynecologic operations is in the following order: 1. Suspensions. 2. Hysterectomies. 3. Salpingectomies. 4. Dilations and curettages. 5. Deliveries (including normal, cesarean, ectopic and miscarriages). 6. Oophorectomies. 7. Ovariectomies.

Gynecologic operations (female, abdominal and pelvic) are required by 12 per cent of all patients and represent 22 per cent of total payments.

Gynecologic specialists cared for 3 per cent of all patients and received 5 per cent of total payments.

The average gynecologic payment is \$100.

Of the 61 cents per month paid by each subscriber, 52 cents is paid to the physician for services and 8 cents is used for administration, leaving 1 cent for reserves.

Obstetric and gynecologic services together represent 41 per cent of the total cost of all services (12 cents a month per person for gynecologic and 10 cents a month per person for obstetric services).

In Mr. Churchill's words, "the magic of the averages to the rescue of the millions" is shown by the fact that 10 cents a month per person will pay for all obstetric deliveries at fair fees (as has been indicated) and that

12 cents a month per person will also provide fair fees for all gynecologic corrective and restorative operations. Including administration expenses, the total cost of 30 cents a month per person, or about \$15.35 a year per family, would afford full access for every family to the benefits of essential and greatly needed obstetric and gynecologic surgery services.

It remains for the medical profession to formulate workable programs embodying the prepayment principle.

SUMMARY

The barriers to better obstetric care are more largely economic and educational than medical.

Physicians' charges for the obstetric service of normal delivery are generally nominal amounts of \$25 to \$50. Yet, in connection with the expenses of specialists' services, hospitalization and nursing, an economic problem does exist in obstetric care. The problem is to find a place in the family budget for the support of more fully trained obstetricians or more complete care from well trained general practitioners.

A monetary valuation of a newborn child at \$9,000 and of an adult at \$30,000 indicates a loss due to maternal and infant deaths of close to \$1,850,000,000 annually—demonstrating the importance of good obstetric care in the economic status of the nation.

Government participation in payment for medical services, particularly for obstetric care, is definitely increasing. The medical profession is facing the decision of either opposing use of government funds except for the indigent sick or accepting government funds, provided the profession has full voice in the decisions concerning arrangements for distributing such funds. The economics of the problem point toward utilization of government funds under sound programs advanced by the medical profession.

Voluntary, nonprofit, prepayment medical plans are becoming of ever greater significance to the private practice of medicine—especially obstetric practice. The prospects for obstetric-gynecologic practice under prepayment is shown on the basis of experiences with the Michigan Medical Service plan, where \$15.35 a year per family provides extensive obstetric-gynecologic surgery and fair fees for the physicians.

No amount of change in the present system of distribution and payment for medical service will affect the basic economic problem of sufficient income for every worker to make possible a higher standard of living—food, clothing and housing as well as medical care.

65 East First Street.

Food Requirements.—Food requirements vary with age, sex, weight and surface area, the last being perhaps of greatest importance. Since the determination of surface area is somewhat difficult it is usually believed to be sufficiently accurate to employ the standard tables of caloric requirements per kilogram of body weight in computing the total diet needs. These requirements are, roughly, at rest, 25 to 30 calories per kilogram ($2\frac{1}{2}$ pounds); at light work, 35 to 40 calories per kilogram; at moderate work, 40 to 45 calories per kilogram; at hard work, 45 to 60 calories per kilogram. Most food requirement tables state that children from 6 to 16 need approximately 50 to 90 per cent of the food needed by an adult male at moderate activity.—*The Hospital in Modern Society*, edited by Arthur C. Bachmeyer and Gerhard Hartman, New York, Commonwealth Fund, 1943.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

SATURATED AIR FEVER THERAPY UNITS ACCEPTABLE

Manufacturer: Equipment Service Company, 915 Behan Street, Pittsburgh.

The Saturated Air Fever Therapy Units are designed to produce temperature rises either in the whole body by general application or in the arms, legs or back by local applications. The units are of three types: the one for general application accommodating the entire body except the head, and two types for local applications, the one for treating the torso and the other for treating the extremities.

The fever therapy box contains an air conditioning system of the general dew point type in which a highly atomized water spray in the upper end of a small duct supplies both the motive power for circulating air and the heat and moisture for saturating it at the desired temperature.

A water temperature of 130 F. will produce a uniform saturated atmosphere of from 120 to 125 F. Since the air is saturated on entering the box, and loses heat before being returned to the air conditioning part of the cycle, saturation is insured throughout.

The unit was examined by the Council, and it was found to be a practical apparatus for administering fever therapy. The comfort, safety and quality of the heat given by this source of saturated moist air was found satisfactory.

The Council on Physical Therapy voted to accept the Saturated Air Fever Therapy Units for inclusion in its list of accepted devices.

BELTONE HEARING AID, MODEL 603H, ACCEPTABLE

Manufacturer: Beltone Hearing Aid Company, 847 West Jackson Boulevard, Chicago.

The Beltone Hearing Aid, Model 603H, is a vacuum tube instrument consisting of a transmitter with a crystal microphone and a large crystal receiver, and a battery unit. The device was examined by the Council and the results of that examination are as follows:



Beltone Hearing Aid
Model 603H.

Weights and overall dimensions of the various parts. transmitter, $3\frac{3}{4}$ inches by $2\frac{1}{4}$ inches by $\frac{3}{4}$ inch; weight with cords and receiver, 6 ounces. Crystal receiver, 1 inch in diameter. Batteries weigh 11 ounces. The total weight of the entire instrument is 17 ounces.

Batteries.—Voltages and current drains are as follows:

A-battery, 1.5 volts; current drain at $\frac{1}{2}$, $\frac{3}{4}$ and full volume, 82 milliamperes. B-battery, 45 volts, current drain at $\frac{1}{2}$, $\frac{3}{4}$ and full volume, 1.0 milliampere. The set may be used with a 1.5 volt A-battery and a $22\frac{1}{2}$, 33 or 45 volt

B-battery. All tests were made with the 45 volt battery.

All required data have been furnished by the manufacturer, such as description, amplification graphs, guaranty certificate, instructions for use and list of servicing agencies. The service plan as described is satisfactory.

Acoustical Gain.—(Average of observations of two trained observers using fitted ear molds seated 5 feet from loud speaker delivering frequencies of pure sine wave characteristics.)

Volume Control				Frequency			
Set at	256	512	1,024	1,448	2,048	2,896	4,096
$\frac{1}{2}$	3	12	12	16	15	9	7
$\frac{3}{4}$	7	17	17	18	20	18	24

Physical and Mechanical Features.—The instrument consists of a black molded plastic case of pleasing appearance and is apparently sturdily built. A single control consisting of a plastic disk 1 inch in diameter and $\frac{3}{16}$ inch thick serves both as the off and on switch and the volume control. No attempt is made to modify the frequency response.

Performance.—In general the performance of the instrument is good and quite as represented. There is a minimum of internal noise and practically no feedback squeal. At maximum intensity some distortion develops, but for any practical purpose this maximum intensity would not be necessary.

The Council on Physical Therapy voted to declare the Beltone Hearing Aid acceptable for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

DIPHTHERIA TOXOID, TETANUS TOXOID, ALUM PRECIPITATED, COMBINED (See New and Nonofficial Remedies, 1943, p. 549).

The following additional products have been accepted:

GILLILAND LABORATORIES, INC., MARIETTA, PA.

Combined Diphtheria-Tetanus Toxoid, Alum Precipitated: 1 cc. and 10 cc. vials in packages of two 1 cc. vials and of one 10 cc. vial.

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Refined Diphtheria-Tetanus Toxoid, Alum Precipitated: 1 cc. and 10 cc. vials in packages of two 1 cc. vials and of one 10 cc. vial.

PARKE, DAVIS & Co., DETROIT

Diphtheria-Tetanus Toxoid (Combined): Packages of three 2 cc. vials and packages of one 30 cc. vial.

SHARP & DOHME, INC., PHILADELPHIA

Combined Diphtheria-Tetanus Toxoid, Alum Precipitated: 1 cc. and 10 cc. vials in packages of two 1 cc. vials and of one 10 cc. vial.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1943, p. 401).

The following dosage forms have been accepted:

CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N. Y.

Ampule Solution of Estrogenic Substance (in oil): 1 cc. size containing the equivalent of 2,000 international units per cubic centimeter, 5,000 international units per cubic centimeter, 10,000 international units per cubic centimeter or 20,000 international units per cubic centimeter of estrone in sesame oil with benzyl alcohol 3 per cent.

TUBERCULINS (See New and Nonofficial Remedies, 1943, p. 565).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tuberculin (Diagnostic): Packages containing three 1 cc. diaphragm stoppered vials of tuberculin, one of each dilution 1:100, 1:1,000 and 1:10,000. Preserved with 0.5 per cent phenol.

MENADIONE (See New and Nonofficial Remedies, 1943, p. 619).

The following dosage forms have been accepted:

JOHN WYETH & BROTHER, DIVISION WYETH INCORPORATED, PHILADELPHIA

Ampul Menadione (in corn oil) 1 mg. per cc.: 2 cc.

Tablets Menadione: 1 mg.

AMYTAL (See New and Nonofficial Remedies, 1943, p. 481).

The following dosage form has been accepted:

ELI LILLY AND COMPANY, INDIANAPOLIS

Tablets Amytal: 32 mg.

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SATURDAY, APRIL 8, 1944

CONFUSION CONCERNING SHOCK

The term shock has been loosely applied to a number of apparently unrelated conditions. Many regard it as a state of acute circulatory failure characterized by prostration, apathy or stupor, tachycardia, feeble regular pulse and diminished blood pressure. The effects of syncope, fright, exhaustion, anesthesia, hemorrhage, primary shock, cardiac failure or secondary shock conform to this broad application of the term.

The attention of surgeons is focused on shock following trauma. Some of them recognize¹ that at least three mechanisms may cause low blood pressure after injury. One of these, primary or neurogenic shock, is a neurovascular reaction like that of syncope or fainting. This develops promptly after injury and is usually transient unless accompanied by extensive trauma or hemorrhage. Occasionally primary shock may merge gradually into secondary shock without an interval of partial recovery. Recent experiments² indicate that hemoconcentration is not present in primary or neurogenic shock.

Low blood pressure may develop promptly from voluminous hemorrhage or gradually from slow or repeated small hemorrhages. The clinical signs of hemorrhage are like those of secondary shock, but it has been shown³ that they differ in other important particulars. Hemorrhage is followed by rapid dilution of the blood which, in otherwise normal subjects, is proportional to the volume of blood lost. Low blood pressure occurring shortly after trauma is due chiefly to neurogenic and hemorrhagic effects.

The third mechanism results from deranged capillary function. Products of tissue autolysis or of infection, absorbed from damaged tissues, produce systemic effects like those of capillary poisons. Consequent leakage of

fluid from the blood into the tissue spaces disturbs fluid balance, lowers the blood volume and causes hemoconcentration. Decreased blood volume, combined with an increased volume capacity of the capillary bed, causes circulatory deficiency. This mechanism requires time for development; it is never seen immediately after injury and hence is called delayed or secondary shock.

Recent reports both by English and by American authors indicate confusion in attempting to analyze the causes of low arterial pressure after traumatic injuries. Data were collected on hemoconcentration, blood volume, blood pressure and other clinical features, but these items showed little uniformity. The injuries described varied widely in character, in severity, in amount of blood lost and in other features. Obviously it is difficult to correlate such various items into a logical picture.

A few causes for bewilderment are apparent and should be eliminated. Cases of traumatic injury present varying combinations of neurogenic shock, hemorrhage and secondary shock, each characterized by low arterial pressure. The importance of these items varies from case to case, and a formula has not yet been devised by which their relative weight in such a combination may be evaluated.

Circulatory deficiency following trauma may be due to neurogenic reactions, to the effects of hemorrhages, to absorption of toxic products or may be due in part to each. Traumatic shock is not a disease entity but a syndrome; it represents the summative effects of several factors. These vary in different cases and in the same case at different times. Obviously the mechanisms involved in shock from trauma should be studied separately as neurogenic, hemorrhagic, toxic and perhaps other factors.

Continued efforts to explain traumatic shock on the basis of a single mechanism prolong the confusion. The recognition of several contributory causes, including toxic factors, will go far toward establishing agreement. Investigations on other features of shock may then go forward in an atmosphere somewhat cleared of controversial discussions.

The basic principles on which agreement seems possible are as follows: Surgical shock, like that resulting from extensive trauma, is not due to a single cause but to a combination of causes: the anesthetic, the local loss of blood and fluid, emotional and neurogenic reactions, infection or intoxication which may have reduced the patient's physiologic state, the disease itself which necessitated operation, and toxic products of autolysis or of infection absorbed from traumatized tissues. The relative importance of these factors varies in different cases and they operate in varying combinations. Some of these factors are lacking in shock from other causes.

The occurrence of secondary shock is not limited to traumatic injuries, burns and the aftermath of extensive surgery. Similar circulatory deficiency may develop incident to abdominal emergencies, severe infections,

1. Blalock, A.: Principles of Surgical Care, Shock and Other Problems, St. Louis, C. V. Mosby Company, 1940.

2. Phemister, D. B., and others: Afferent Vasodepressor Nerve Impulses as a Cause of Shock, Ann. Surg. **119**: 26 (Jan.) 1944.

3. Moon, V. H.; Morgan, D. R.; Lieber, M. M., and McGrew, Donald: Similarities and Distinctions Between Shock and the Effects of Hemorrhage, J. A. M. A. **117**: 2024 (Dec. 13) 1941.

4. Moon, V. H.: Shock: Its Dynamics, Occurrence and Management, Philadelphia, Lea & Febiger, 1942.

intoxications such as icterus gravis or eclampsia, and from the effects of anoxia and of various poisons. In such instances, neurogenic shock and the effects of hemorrhage usually are not present; toxic factors are of major importance, and the mechanism is probably that of capillary relaxation and endothelial permeability.

CLINICAL THERMOMETRY

How long does it take a clinical thermometer to record body temperature accurately? The answer apparently is not known by all those who use this instrument of precision, according to DeNosaquo, Kerlan, Knudsen and Klumpp.¹ In order to learn what schools of nursing are teaching with respect to taking temperatures, a questionnaire was sent to one hundred outstanding schools. According to the replies, twenty-seven schools taught their students that the time required for accurate registration was less than three minutes, thirty-seven stated three minutes and only five recommended an interval longer than three minutes. Many clinical thermometers on the market bear such designations as "½ minute," "1 minute" or "60 seconds," which obviously suggests to the user that the time required to register body temperature is that inscribed on the instrument.

The authors conducted a clinical and physical study to determine, first, how long it takes instruments of various makes and types to record body temperature and, second, whether or not there is any consistent difference between instruments bearing different time designations. On the basis of a series of observations, the validity of which was statistically controlled, the authors concluded that an insertion time of three minutes should be the minimum interval for oral clinical thermometers under ordinary conditions of use. It was also found by them that variations in the configuration of the bulb made no appreciable difference in the time required to reach the final reading. Similarly the time stamped on the thermometer did not have any relation to the length of time required by the instrument to reach equilibrium, and in all circumstances a longer time was needed to give an accurate reading than that imprinted on the thermometer to give an accurate reading.

In view of these observations it would seem to be a good thing for thermometer manufacturers to eliminate from their instruments time designations, which can only be misleading and result in serious diagnostic and therapeutic misimpressions.

There is no instrument of precision that is more valuable in the diagnosis and prognosis of disease than the clinical thermometer. It is therefore essential that it be given sufficient time to record accurate information. There is a temptation these days to rush everything; but when it comes to taking temperatures it is the course of wisdom to make haste slowly.

1. DeNosaquo, N.; Kerlan, I.; Knudsen, L., and Klumpp, T. G.: *The Clinical Use of Oral Thermometers*, J. Lab. & Clin. Med., February 1944.

PRIORITY IN THE DISCOVERY OF FEVER THERAPY IN PSYCHOSIS

Priority for the use of malaria and relapsing fever in the treatment of dementia paralytica, according to Neymann,¹ should belong to Rosenblum. In 1876 Rosenblum² purposely infected psychotic and demented patients with relapsing fever; in the same year he published his observations that malaria frequently produces remissions in mental diseases. Zakon³ has furnished a translation of Rosenblum's original article, together with a photostatic copy of the Russian journal in which the paper appeared. The original is to be found in the Surgeon General's Library. A partial German translation of Rosenblum's article, by Oks,⁴ was published in 1879. The latter article attracted the attention of Dr. Peter Bassoe of Chicago, who in turn supplied the information to Dr. Neymann.

As chief of staff of the Odessa Psychopathic Hospital, Rosenblum had many opportunities to observe the effect of intercurrent febrile disease on various psychoses. In his review of such literature as was available to him, Rosenblum mentions among others Leidesdorf,⁵ who states "From personal observations I must conclude that febrile disease decreases the degree of psychic disturbance and that this action continues long after the cessation of the fever." This quotation assumes particular significance in view of the fact that Wagner-Jauregg,⁶ whose paper on "Prevention and Treatment of Progressive Paresis with Artificially Induced Malaria" in 1931 won him the Nobel Prize, worked as assistant in the psychiatric clinic of Leidesdorf during the years 1883 to 1889.

Rosenblum's report is based on observations on the effect of fever on psychoses in 32 cases; in 21 of these the psychosis was cured, in 3 the condition improved and in 8 it remained unchanged. Eight of the patients who were cured had far advanced melancholia; the others had various chronic forms of insanity. The author states that "the number of recoveries may seem too high, and I admit that some of the patients may relapse into their former state. It is possible too that some of the patients might have recovered without fever. However, although mindful of these possibilities, I still insist that febrile disease has a curative effect on the psychoses. This fact seems well proved."

In his original article Rosenblum reported that 12 cases in his series were observed during the epidemic of recurrent fever which took place in his city in 1874 and again in 1875. However, in a footnote on the

1. Neymann, C. A.: *Artificial Fever*, Springfield, Ill., Charles C Thomas, Publisher, 1938, pp. 7 and 127.

2. Rosenblum, A. S.: *Relation of Febrile Diseases to the Psychoses*, Trudi vrach. Odessk. g. boln., 1876-1877, vol. 2, pt. B.

3. Zakon, S. J.: Alexander Samoilovich Rosenblum: His Contribution to Fever Therapy, Arch. Dermat. & Syph. 48: 52 (July) 1943.

4. Oks, B.: Ueber die Wirkung fieberhafter Krankheiten auf Heilung von Psychosen, Arch. f. Psychiat. 10: 249, 1879.

5. Leidesdorf, M.: *Lehrbuch der psychischen Krankheiten*, ed. 2, Erlangen, F. Enke, 1865, p. 142.

6. Wagner-Jauregg, J.: *Verhütung und Behandlung der progressiven Paralyse durch Impfmalaria*, Erg. Bd. d. Handb. d. experim. Therap., Munich, 1931.

fourth page of the German article the statement is made that "according to a personal communication of Rosenblum recurrent fever was produced in all these cases by inoculation of the patients with spirilla." Clinical experimentation of this sort was undoubtedly too advanced for the time; therefore he did not dare to describe the method but was forced to camouflage his experimentation under the guise of an "epidemic" of recurrent fever. It is apparent from reading the original article that he realized that it did not make much difference whether the fever was produced by an attack of typhoid, of malaria or of recurrent fever. His interest in the last named disease was probably due to the fact that it was easy to inoculate a patient with the spirilla of recurrent fever, because these organisms could be observed in a specimen of blood. Neymann believes that at least 10 of the cases represented an early stage of dementia paralytica and that possibly more were instances of syphilis of the central nervous system. It is impossible not to conclude with Neymann that Rosenblum was the first to appreciate the curative effect of fever itself on the psychoses and that he was the first to inoculate psychotic patients with the febrile disease. Possibly Wagner-Jauregg was not aware of the work of Dr. Rosenblum because of its publication in an obscure paper in a language little read outside the country of its origin.

THE INCIDENCE OF DIABETES IN SELECTEES

The analysis by Dr. Blotner and his associates¹ of the incidence of glycosuria among Massachusetts registrants for Selective Service is an extremely valuable study. While the figures in the article are impressive, they demand analysis and confirmation. The results of this study are puzzling, because the figures are much higher than those reported in the National Health Survey. Here is the incidence of diabetes in successive age groups in the Massachusetts material and in the age groups most closely corresponding in the National Health Survey of 1935-1936:²

Massachusetts Selectees		National Health Survey (Males)	
Age Group	Number of Diabetic per Thousand Registrants	Age Group	Number of Diabetic per Thousand
All ages.....	4.6	15-24	0.6
18-25.....	2.0	25-34.....	0.9
26-30.....	3.5	35-41.....	2.0
31-35.....	6.2		
36-40.....	6.1		
41-45.....	10.6		

If the Massachusetts data are at all representative, the incidence of diabetes among young adults is much greater than has hitherto been assumed on the basis

of earlier studies—at least three to four times as great as actually observed in the National Health Survey at ages under 25 and four to five times at ages 25 to 45. In part, the differences shown may be explained on the basis that known cases escape enumeration in population surveys as well as symptomless cases that have not come to diagnosis. In addition, a steady sizable increase in the incidence of diabetes at younger ages has occurred since the last survey was made as a result of the lessened mortality among young persons with diabetes, while the incidence of new cases may be presumed to be stable. There are, however, several reasons why one should hesitate to assume that the Massachusetts figures are representative. The chief general considerations from the statistical point of view are these: 1. The number of cases of diabetes in the sample is not large: 208 altogether. 2. The experience is largely urban. Previous studies³ have shown a significantly higher prevalence of diabetes in cities as compared with rural areas. Analysis of the Massachusetts data by density of population likewise indicates that the proportion with diabetes is appreciably lower in less thickly populated areas. 3. The ratios are particularly high also in men of racial stocks such as Jews and Irish, who form a much higher proportion of the Massachusetts population than that of the country as a whole. Among the men of native American stock there were about 3.5 with diabetes per thousand as compared with 4.6 in the experience as a whole. 4. It is significant that those known to be diabetic prior to examination numbered 42, or 1 per thousand. This ratio is practically identical with the figure for men between 20 and 45 in the National Health Survey. 5. The low proportion of overweights is surprising even though the weights are not previous maximum figures but as of the date of examination, and though obesity is less common among young diabetic patients than among those past 45.⁴ Moreover, follow-up study⁵ of a group of nondiabetic persons with glycosuria showed that even among the younger ones the proportion subsequently developing diabetes was much higher for overweight than for average weight or underweight patients. 6. The ratio of nondiabetic to diabetic persons with glycosuria is strikingly low—about 5 to 4. Unfortunately, no direct comparisons can be made with other material because the study under review excludes cases with a single positive specimen. 7. The Massachusetts figures for diabetes appear high in relation to the frequency of glycosuria among unselected men of the same age, as based on industrial, student, life insurance and periodic health examinations. It should be pointed out

1. Blotner, H.; Hyde, R. W., and Kingsley, L. V.: Studies in Diabetes Mellitus and Transient Glycosuria in Selectees and Volunteers, *New England J. Med.* **229**: 885, 1943.
2. Perrott, G. St. J.: Personal communication.

3. Joslin, E. P.; Dublin, L. I., and Marks, H. H.: Studies in Diabetes Mellitus: II. Its Incidence and the Factors Underlying its Variations, *Am. J. M. Sc.* **187**: 433, 1934.
4. Joslin, E. P.; Dublin, L. I., and Marks, H. H.: Studies in Diabetes Mellitus: IV. Etiology, *Am. J. M. Sc.* **191**: 759, **192**: 9, 1936.
5. Marble, A.; Joslin, E. P.; Dublin, L. I., and Marks, H. H.: Studies in Diabetes Mellitus: VII. Nondiabetic Glycosuria, *Am. J. M. Sc.* **197**: 533, 1939.

that only a fraction of the total among persons with glycosuria in these groups were diabetic. (a) Thus, among approximately 2,000 male employees of the Metropolitan Life Insurance Company under age 40 there were only 6 cases of glycosuria (0.2 per cent or over), or about 3 per thousand men. (b) A study of rejections for life insurance by the same company about ten years ago showed that 1.3 per thousand males at ages under 35 were refused Ordinary insurance because of glycosuria. (c) Dublin, Fisk and Kopf's⁶ analysis of results of periodic health examinations showed the following proportions of white males with "marked" glycosuria: at ages under 25 (mostly 18 to 25), 1 per thousand; ages 25 to 34, 3 per thousand; ages 35 to 44, 3 per thousand. (d) Sydenstricker's⁷ material of the same kind shows at ages 20 to 24, 1.1 per thousand; 25 to 29, 1.7 per thousand; 30 to 34, 2.2 per thousand; 35 to 39, 2.7 per thousand; 40 to 44, 5.2 per thousand. (e) Short and Ley's⁸ material of a similar nature but based on quantitative tests showed the following:

Glycosuria, 0.6 per cent or more:

Ages 20 to 29..... 1.9 per thousand

Ages 30 to 39..... 5.0 per thousand

Glycosuria, 1.1 per cent or more:

Ages 20 to 29..... 1.4 per thousand

Ages 30 to 39..... 3.6 per thousand

(f) The Cincinnati⁹ studies of white male office and industrial workers showed 9 per thousand with glycosuria (degree not specified). (g) Among 43,000 male college students there were only 33 with diabetes, or 0.7 per thousand.¹⁰

Apart from statistical considerations as to the general applicability of the Boston results, the incidence of diabetes in this study, largely based as it is on diagnoses from laboratory findings only, seems high on other grounds. The circumstances under which these men are examined are by no means ideal. The nervous tension attending the examinations undoubtedly gives rise to an increased number of transient glycosurias just as has been observed in college students during scholastic examinations¹¹ and in athletes immediately after a game.¹² Among the latter, hyperglycemia as

well as glycosuria has been noted.¹³ Again, many observers have called attention to the limitations of the dextrose tolerance test because it is an abnormal procedure and is influenced by a number of factors such as previous diet, infections and endocrine disorders.¹⁴ It is notable that most of the cases among Massachusetts registrants were symptomless and even by laboratory standards comparatively mild. The low incidence of obesity has also been mentioned.

Probably a significant proportion of the 166 cases among the registrants who were not previously known to be diabetic would be found on later examination not to have true diabetes. It is, no doubt, desirable that these men be disqualified or at least postponed for military service, but the final diagnosis in many instances might be deferred.

The study by Blotner and his associates, however, gives good evidence that our estimates of the incidence of diabetes may have to be revised upward by an appreciable amount. It would be a distinct service both for clinical and for statistical purposes if all these men, except those previously known to have diabetes, or at least the large number of borderline cases, were followed up and reexamined at suitable intervals to determine whether their metabolic abnormality persisted. Intensive study of these cases might prove valuable in other directions also.

FROZEN-DRIED NERVE GRAFTS

Supplementing his earlier experiments on rats, Paul Weiss¹ of the Department of Zoology, University of Chicago, has developed a successful technic for the transplantation of stored frozen-dried nerve grafts into cats, monkeys and other larger animals,² a technic presumably applicable to man. In order to avoid sacrificing a "minor" nerve for the repair of a "more vital" one, earlier experimenters tested the feasibility of transplanting stored, preserved or fixed nerve tissues. Most of these attempts were unsuccessful, presumably because of autolysis or other forms of denaturation of stored nerve segments. Weiss tried the method of immediately freezing and dehydrating the excised nerve segments, a method of preservation and storage used with success in other fields of biochemical research.³ Nerves dissected aseptically were dropped into isopentane immersed in liquid nitrogen ($-195^{\circ}\text{C}.$), where they were frozen instantaneously. The frozen nerve segments were then dehydrated for one week in high vacuum over phosphorus pentoxide at $-40^{\circ}\text{C}.$, after

6 Dublin, L. I.; Fisk, E. L., and Kopf, E. W. Physical Defects as Revealed by Periodic Health Examinations, *Am J M Sc.* **170**: 576, 1925.

7 Sydenstricker, E., and Britten, R. H. Physical Impairments of Adult Life: Prevalence at Different Ages, Based on Medical Examinations by the Life Extension Institute of 100,924 White Male Life Insurance Policyholders Since 1921, *Am J Hyg* **11**: 95, 1930.

8 Short, J. J., and Ley, H. A., Jr. Incidence of Albuminuria with Red Cells and Casts and of Glycosuria at Different Age Periods Among 10,000 Unselected Examinees, *Proc. Lif Extension Examiners* **1**: 134, 1939.

9 Heart Council of Greater Cincinnati: Life Conservation Studies. I. Physical Impairment Among Office Workers, 1929, II. Physical Impairment Among Industrial Workers, 1930.

10 New York Diabetes Association: Incidence of Diabetes in Certain Educational and Industrial Groups, 1935.

11 Folin, O.; Denis, W., and Smillie, W. G. Some Observations on "Emotional Glycosuria" in Man, *J. Biol. Chem.* **17**: 519, 1914.

12 Edwards, H. T.; Richards, T. K., and Dill, D. B.: Blood Sugar, Urine Sugar and Urine Protein in Exercise, *Am J Physiol.* **98**: 352, [Sept.] 1931.

13 Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear and Rage, New York, D. Appleton & Co., 1929.

14 Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1940, pp. 718 ff.

1. Weiss, P., and Taylor, A. C.: *Proc. Soc. Exper. Biol. & Med.* **52**: 326 (April) 1943.

2 Weiss, P.: *Proc. Soc. Exper. Biol. & Med.* **54**: 274, 277 (Dec) 1943.

3. Hoerr, N. L.: *Anat. Rec.* **66**: 81, 91, 1936.

which they were stored for several months in sealed sterile containers. Before use the stored dried grafts were rehydrated in Ringer's solution in vacuo. As a result of rehydration the stored grafts resumed their normal appearance and major histologic characteristics, including specific staining reactions.³

Rehydrated frozen-dried grafts from 1 to 3 cm. in length have thus far been transplanted into hindleg nerves of 21 rabbits, 20 cats and 81 monkeys. The most successful technic was without the use of sutures, the grafts being held in place by elastic sleeves cut from rehydrated, frozen-dried arteries of the same species. The elastic sleeves were fitted over the nerve ends by means of a special splicing instrument designed by the author. After this instrumental fitting the sleeves were held in place by clotted blood. Casts or other means of restraining active or passive movements were not usually found necessary.

Six grafts in cats and 21 grafts in monkeys have thus far been examined functionally from five and a half to ten months after the operation. Motor recovery was tested by observation of spontaneous and reflex movements and, by electrical stimulation of the exposed nerve. Among the 21 monkey grafts functional restoration was excellent in 8, good in 4, fair in 3 and poor in but 2 cases. Full recovery had occurred after the use of homoplastic grafts as well as macaque-to-spider grafts, in the latter case with perceptible delay. Cat-to-monkey grafts were unsuccessful. In a case in which full recovery occurred, tested 182 days after the operation, electric shock to the nerve trunk proximal to the graft gave strong contraction in intrinsic foot muscles at 320 mm. regeneration distance. Regeneration had thus proceeded at a minimum daily average of nearly 2 mm., including the graft and junction.

Microscopic studies of successful grafts have shown that the great mass of the regenerating fibers pass straight, unbranched, unobstructed across the gap into the distant stump and that there is neither fibrosis nor neuroma formation. The use of the arterial sleeve thus makes possible an orderly regeneration pattern, the majority of the fibers of a given fascicle remaining together and therefore reinnervating a relatively localized muscle group instead of being dispersed at random over the whole denervated periphery, as commonly happens after nerve suture.

Both nerve grafts and artery sleeves may be stored for at least four months in the frozen-dried condition without deterioration (longer storage has not yet been tested). Weiss therefore believes that banks of human nerves and artery sleeves of assorted sizes stored in the frozen-dried condition would be feasible in a modern hospital and valuable under present conditions caused by the war.

Current Comment

SIMILARITIES OF CERTAIN VIRUSES OF THE NERVOUS SYSTEM

The rickettsial, the smallpox, the influenzal and the poliomyelitic viruses represent different groups of closely related viruses to which can now be added the viruses of Russian spring-summer encephalitis and of louping ill. The encephalitis is a new clinical type observed by Russian investigators in thickly forested parts of Russia during May and June of recent years. The virus of this disease has been recovered from ticks (*Ixodes persulcatus*) and from wild rodents in certain regions. It has been passed experimentally by the tick from infected to healthy animals. It has been found¹ to be unrelated to other encephalitic viruses except that of the encephalomyelitis of sheep called louping ill. This virus can be transferred also from infected to healthy sheep by a tick (*Ixodes ricinus*). The comparative study of the viruses of the Russian encephalitis and of louping ill¹ show that they are closely related in complement fixation, neutralization and cross resistance tests as well as in the range and nature of their pathogenicity for animals. The Rockefeller Institute investigators regard the strains of the viruses they have studied as identical. The serum of a patient who became infected with either or both viruses while working with them responded in the same way to complement fixation and neutralization tests with the two. The serum of another patient who recovered from a laboratory infection with louping ill virus contracted in 1933 also gave similar positive results in tests with the two viruses. This establishment of definite groups or types of viruses will facilitate the study of the nature and scope of their pathogenic powers.

SEROLOGIC DIAGNOSIS OF RELAPSING FEVER

The diagnosis of relapsing fever may be difficult, since the symptoms resemble closely those of other diseases with intermittent fever. If pulmonary involvement is present the symptoms may be ascribed to other acute infectious diseases. From the blood of infected mice and rats Stein¹ has prepared a stable spirochetal antigen. Spirochete-containing blood was laked with saponin and the spirochetes were washed well with isotonic solution of sodium chloride. Suspensions of spirochetes obtained in this way were found to act as specific antigens in complement fixation and agglutination tests with serum from patients and animals infected with spirochetes of relapsing fever. Positive reactions were not obtained with serum of patients convalescent from other infections, e. g. typhus fever, malaria, Rocky Mountain spotted fever, Weil's disease, syphilis or typhoid. Stein's antigen merits further study, since it may prove to be useful in the diagnosis of relapsing fever.

1. Casals, J., and Webster, L. T.: Relationship of the Virus of Louping Ill in Sheep and the Virus of Russian Spring-Summer Encephalitis in Man, *J. Exper. Med.* **79**: 45 (Jan.) 1944.
1. Stein, G. J.: The Serologic Diagnosis of Relapsing Fever, *J. Exp. Med.* **79**: 115, Jan. 1944.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

THE NEWTON D. BAKER GENERAL HOSPITAL

The new Newton D. Baker General Hospital, near Martinsburg, W. Va., covers 30 acres on a military reservation consisting of 186 acres. Construction was begun during 1943, and the first patients were admitted in January 1944. Over 700 patients are now receiving treatment at the hospital, and it will eventually accommodate 1,750 patients. The hospital is built on the standard plan of the Army's general hospitals, with certain variations. A two story administration building connects by corridors with the rest of the installation. Corridors connect all buildings, so that it is not necessary to expose the patient at any time to climatic changes. There are approximately eighty buildings, including those not corridor connected. The walls are of masonry, and construction is of a semipermanent type. An automatic fire control system has also been installed. The space between the buildings is laid out in avenues and streets. A chapel has been erected and a guest house, under the management of the Red Cross, where relatives of patients may secure lodging for a few days while visiting. Air conditioned wards are provided for postoperative cases. Water is secured from three wells, and that used for washing and cooking is softened. A gymnasium is now in the process of construction, as well as a theater building. Portable moving picture units are moved through the wards for bed patients. When fully completed, all wards containing patients unable to move will be wired for sound, so that entertainment broadcast from the patients' auditorium, or from outside, can be received by all.

Col. E. L. Cook is the commanding officer of the new hospital, and the permanent personnel will consist of several hundred officers, nurses and enlisted men.

BRIG. GEN. CONDON C. McCORNACK RECEIVES LEGION OF MERIT AWARD

Brig. Gen. Condon C. McCornack, formerly of Eugene, Ore., has been awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding service. As surgeon of the Western Defense Command and Fourth Army from Nov. 12, 1940 to Jan. 26, 1943 his exceptional qualities of leadership, high professional knowledge, keen foresight and sound judgment enabled him successfully to effect the organization and administration of the medical service of the command, thus assuring the availability of necessary medical supplies and the finest medical care for the troops, most of which were located in isolated combat positions on the west coast of the United States, immediately after the declaration of war Dec. 8, 1941. As Deputy Chief of Staff, Western Defense Command and Fourth Army, from Jan. 27 to Sept. 14, 1943, and Deputy Chief of Staff, Western Defense Command, from Sept. 15 to Dec. 23, 1943, Colonel McCornack exhibited sound military judgment, tact and resourcefulness in the coordination of headquarters, staff functions, and in the planning and handling of many details incident to the preparation of two major task forces which subsequently engaged and routed the enemy with complete success from one of his strongholds in the Aleutian Islands and forced his evacuation from the other." Dr. McCornack graduated from Jefferson Medical College, Philadelphia, in 1904 and has been in the service since 1910.

CAPT. REUBEN E. ALMQUIST AWARDED LEGION OF MERIT

Capt. Reuben E. Almquist, formerly of Albert City, Iowa, has been awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services" in the Solomon Islands. His deeds were described in a communication from the United States Army headquarters in the South Pacific: "Frequently the only officer present to direct the care of casualties, Captain Almquist commanded a medical battalion's collecting company when the Japanese bombed Rendova Island on July 2. His collecting station was the only organized medical installation and he calmly and skilfully treated the wounded while bombers roared overhead. On Laiana beach and Munda sector, New Georgia, snipers frequently directed their fire at his station, but he refused to permit that to interfere with the care of the wounded. On Arundel Island Captain Almquist organized and efficiently operated a 50 bed hospital under difficult conditions." Dr. Almquist graduated from Rush Medical College, Chicago, in 1928 and entered the service Aug. 15, 1942.

LIEUT. STUART C. KNOX RECEIVES ARMY SILVER STAR

Lieut. Stuart C. Knox, formerly of Los Angeles, serving in the Medical Corps of the U. S. Naval Reserve, who has been in the South Pacific war theater during the last year, received from the War Department a citation "for unusual gallantry in action for administering first aid and evacuating more than 100 wounded men under fire in New Georgia" and was awarded the Silver Star Medal of the Army. Dr. Knox was with the Marines invading the New Georgia group July 1 to Aug. 26, 1943 and has seen action in several other battles in the South Pacific. He graduated from the College of Medical Evangelists, Loma Linda, Calif., in 1934.

THIRTEENTH CLASS OF AVIATION PHYSIOLOGISTS

Graduation exercises at the School of Aviation Medicine, Randolph Field, Texas, for the thirteenth class of Aviation Physiologists were held March 18. Brig. Gen. Eugen G. Reinartz, U. S. Army, commandant of the school, presented the certificates. The course in aviation physiology is of five weeks' duration. Among those graduating were the following officers of the medical corps:

1st Lieut. Hylan Arthur Bickerman, Forest Hills, N. Y.
1st Lieut. Ralph J. Greenberg, Chicago.
1st Lieut. Harvey A. Lewis, Long Beach, Calif.

PROMOTIONS IN THE ARMY MEDICAL DEPARTMENT

The War Department recently announced the promotion of Brig. Gen. Paul R. Hawley, College Corner, Ohio, and Brig. Gen. George C. Dunham, Portland, Ore., to the temporary rank of major general. Col. Stanhope Bayne-Jones, New Haven, Conn., and Col. Condon C. McCornack, Eugene, Ore., were promoted to the temporary rank of brigadier general.

NAVY

LIEUT. COMDR. ROBERT W. SKINNER III
AWARDED NAVY CROSS AND
PURPLE HEART MEDAL

Lieut. Comdr. Robert W. Skinner III, formerly of North Wales, Pa., was recently awarded two medals—the Navy Cross and the Purple Heart. The citation accompanying the Navy Cross award read "For extraordinary heroism while attached to the First Marine Raider Battalion during action against the Japanese forces in the Solomon Islands from Aug. 7 to Oct. 10, 1942. In the fierce battle for possession of Tulagi, Lieutenant Commander Skinner distinguished himself by his expert professional skill and dauntless courage, often in positions exposed to heavy enemy fire, in administering aid to the wounded and supervising the evacuation of casualties, with the result that there were no cases of infection and practically all of the wounded recovered. Later, when his battalion was fighting on Lunga Ridge, he voluntarily made at least three trips from the forward to the rear dressing station, traversing several hundred yards of exposed terrain frequently swept by hostile fire. He subsequently accompanied our forces in the second and third Matanikanu River battles, in the latter instance moving forward with the battalion, despite a badly injured knee. Lieutenant Commander Skinner's heroic conduct and valiant devotion to duty greatly contributed to the fighting efficiency of this battalion and were in keeping with the highest traditions of the United States Naval Service."

In the citation accompanying the Purple Heart award, it was related that Dr. Skinner was injured in the South Pacific area Sept. 27, 1942. He graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1938 and entered the service Dec. 16, 1940.

TWO OREGON NAVAL OFFICERS CITED

Lieut. (sg) William S. Gevurtz, formerly of The Dalles, Ore., has been cited by his commander for outstanding service while on the U. S. S. *Talbot*, when 178 survivors were rescued from another ship. The citation reads in part as follows:

... 38 were casualties requiring treatment. Many were of a serious nature, 19 having burns varying from less than 1 per cent to over 70 per cent of the body surface. Due to the professional skill, well planned preparations, essential organization and prior instruction of medical and first aid personnel, you were able to save all but 1 of the casualties received aboard. Further, the ship was under repeated air attack throughout the period of rescue, during which you and your medical detachment continued to function with no apparent concern for your own personal safety." Dr. Gevurtz graduated from the University of Oregon Medical School, Portland, in 1937 and entered the service in August 1941.

Lieut. Comdr. David E. Sullivan, formerly of Portland, Ore., was recently awarded the presidential unit citation for sinking more submarines than any other single unit in naval history. He has been flight surgeon on the U. S. S. *Card* for more than a year. Dr. Sullivan graduated from the University of Oregon Medical School, Portland, in 1940 and entered the service in September 1941.

NAVY'S NEWEST AND LARGEST HOSPITAL
SHIP INSPECTED

A delegation from the Navy Department, headed by Vice Admiral Ross T. McIntire, Surgeon General of the United States Navy, were received aboard the Navy's newest, largest and most modern hospital ship, the U. S. S. *Refuge*, on March 5 in a combined official inspection and "open house" to invited guests. The new hospital ship was converted from the troop transport U. S. S. *Kenmore* and was placed in commission on February 24. The complement includes twenty medical officers, three dental officers, five hospital corps officers, one volunteer specialist officer who will be in charge of the optical repair unit, the first of its kind on a hospital ship, twenty-nine navy nurses, an American Red Cross representative, which is another "first" as far as hospital ships are concerned, fourteen chief

pharmacist's mates and two hundred hospital corpsmen. The *Refuge* has fixed berths for 630 patients and carries aboard a mobile field hospital comprising 72 cots, a laboratory, x-ray equipment and necessary medical and surgical equipment and supplies. Each of the vessel's twelve wards has a surgical dressing room, diet pantry, utility room, linen locker, toilet and shower. The ship's main laboratory contains modern items of equipment such as a high speed centrifuge, a bacteriologic incubator, autoclaves, a refrigerator and other essentials. The library contains professional books and journals. The laundry is equipped with washing machines, spinners, tumblers, mangles and a steam press. Other features include a pharmacy, dental clinic, stationary and portable x-ray equipment, a complete physical therapy department and a clinic for eye, ear, nose and throat cases.

Comdr. M. A. Jurkops, New Brighton, N. Y., is commanding officer of the vessel and Capt. C. R. Wilcox is senior medical officer. Lieut. (jg) Mildred A. E. Marcan is chief nurse.

NEW DEPOT HOSPITAL OFFERS FACILITIES
IN EMERGENCY CASES TO
THE NAVY V-12 UNIT

Col. John Huling Jr., commanding officer of the Navajo Ordnance Depot, offered the use of the facilities of the new depot hospital in emergency cases of the Navy V-12 Unit. The depot's new 54 bed hospital is completely staffed and was dedicated at a ceremony February 15. A letter of appreciation to the depot commander from the commandant of the Eleventh Naval District at San Diego, Calif., read as follows: "The Medical Officer, Navy V-12 Unit, Arizona State Teachers College, Flagstaff, has informed this office that your hospital, through you, has offered to accept any emergency, surgical and orthopedic cases from the unit. Your willingness to assist and cooperate with the Navy in such a friendly way is sincerely appreciated."

LIEUT. ARTHUR T. WILLETTTS AWARDED
SILVER STAR MEDAL

Lieut. Arthur T. Willetts, a Navy doctor accompanying the Marine invaders of Bougainville and formerly of Verona, Pa., has been awarded the Silver Star Medal for gallantry in attending wounded under fire. The citation accompanying the award set forth that "Lieut. Willetts on last November 1, finding the beach strewn with injured men, established an aid station under cover of jungle growth and stuck to his station despite six enemy machine gun attacks." Dr. Willetts graduated from the University of Pittsburgh School of Medicine in 1937 and entered the service March 9, 1942.

MODIFICATION OF MAXIMUM AGE LIMIT
FOR APPOINTMENT AS ENSIGN

The Navy Department recently announced that the age limit contained in (a) Navy V-12 Bulletin No. 98 and NOPCL No. 11-43 and (b) Navy V-12 Bulletin No. 174 and NOPCL No. 12-43 has been modified in that qualified civilians who will have reached their 31st birthday by the time they may reasonably expect to graduate from medical or dental school are not eligible for appointment as Ensigns H-V(P) or induction and subsequent enlistment as Apprentice Seamen Class SV-12 or SV-12(S).

NAVY PERSONAL

Dr. Oswald S. Lowsley, New York City, recently returned from a tour of inspection of United States Naval Hospitals in his capacity as honorary consultant to the Medical Corps of the United States Navy. The tour included fourteen naval hospitals in the Middle West, on the Pacific Coast and on the Gulf of Mexico. In addition to making his inspection Dr. Lowsley addressed the medical officers of the various hospitals on "The Diagnosis and Treatment of Various Traumatic and War Injuries of the Organs of the Genital and Urinary Tracts."

MISCELLANEOUS

COMMITTEE ON THE MEDICAL RECORDS
OF THE FEDERAL GOVERNMENT
IN THE WAR

A study of the medical records created by agencies of the federal government during the last thirty years is being jointly conducted by the National Archives and the National Research Council with funds provided by the John and Mary R. Markle Foundation. This endeavor to determine the best method of dealing with the great mass of medical records, estimated at over 300,000 cubic feet in volume, that will have been accumulated before the end of the war was initiated by Dr. Solon J. Buck, archivist of the United States.

At present there are more than 900 hospitals and other units within the federal government that have records of the medical diagnosis, observation or treatment of individuals, digests and statistical summaries of such records, and records of medical research and experimentation. After a short time these records serve their initial purpose and are noncurrent so far as the unit that created them is concerned. There has, however, been no way of knowing how much of this material should be made available for research purposes through coordinated control and planning.

Under existing circumstances a physician doing research in a government hospital on one disease cannot possibly know what relevant material might be available at hundreds of other government hospitals. The Veterans Administration frequently must correspond with several hospitals to collect the medical records of one person. Scattered as they are, the records are simply inaccessible to any private investigator, no matter how zealous he may be.

On Dec. 6, 1943 the archivist called the attention of the Committee on Information, Division of Medical Sciences of the National Research Council, to the problems inherent in the government's accumulation of medical records. He declared that the general interest which the National Archives, the several federal agencies, the National Research Council and the medical profession have in the preservation and administration of the medical records of the federal government prompted him to lay before the committee a statement of the problem and to propose cooperative action by the Division of Medical Sciences and the National Archives with a view to its solution.

The archivist was of the opinion that the formulation of a comprehensive program for the medical records should be preceded by a thorough study of methods of creating and administering such records in the various agencies, the location, character, quantity and content of the various bodies of such records now in existence, and the nature and extent of the use that will or might be made of them. He proposed the designation of a committee within the Division of Medical Sciences of the National Research Council to supervise and conduct such a study and, on the basis of the facts collected, to make recommendations to him as to which of these medical records should be preserved and as to the best methods of administering the government's medical records so as to utilize their maximum scientific and administrative value.

The National Research Council authorized Dr. Lewis H. Weed, chairman of the Division of Medical Sciences, to appoint a committee. Those designated are Dr. George W. Corner, Baltimore, director of the Department of Embryology, Carnegie Institution of Washington, chairman; Dr. O. H. P. Pepper, University of Pennsylvania; Dr. Samuel C. Harvey, Yale University, and Dr. Harry Solomon, Harvard University. The following have been assigned by the various government services: Army, Surgeon General's Office, Col. A. G. Love; Adjutant General's Office, Col. R. M. Levy; Navy, Bureau of Medicine and Surgery, Capt. H. H. Montgomery; U. S. Public Health Service, Dr. S. D. Collins; Veterans Administration, Dr. Martin Cooley; Bureau of the Budget, Mr. Elbridge Sibley, and Mr. Dan Lacy, National Archives. Dr. R. K. Burns Jr., Department of Embryology, Carnegie Insti-

tution of Washington, is secretary. At its first meeting the committee restricted the study to include only medical records created in the last thirty years.

It was also decided to visit and survey a selected group of representative hospitals and other agencies of the government among the several departments and bureaus creating medical records. This will make it possible to study records of hospitals of all types and to collect information concerning the creation and flow of records from field units to the departmental level.

It is hoped that the information collected during the survey will enable the committee to determine the potential value of these medical records for research. Which of the records should be preserved to meet the research needs of the government and of private medical scholars? Will the interests of citizens and government be best served by leaving the records at scattered points or would it be more economical and increase the usefulness of the records to centralize them at some one place? Would centralization reveal latent values for technical medical research that have never been exploited? These and a host of other questions concerning the records are of vital interest to the medical profession in general.

If the committee's recommendations contain answers to the majority of these questions, it will contribute materially to the solution of the relatively new but already perennial question of what should be done about medical records; it will also help the archivist of the United States to round out post-war plans for an orderly retirement of the mass of records that may be left without an owner or sponsor when the war is over and the emergency agencies as well as the armed services are demobilized. It will have demonstrated a means whereby the archivist can avail himself of professional knowledge and experience not available to him on his own staff. But most important of all, the committee has the opportunity on behalf of the medical profession to guard against the dispersal of records which should be preserved in the interest of medical science.

EXHIBITION OF "OCCUPATIONAL THERAPY
IN WAR AND PEACE"

The Philadelphia Art Alliance, with headquarters at 251 South 18th Street, will present from April 17 to May 30 the country's most representative exhibition of "Occupational Therapy in War and Peace." Every gallery and showcase in the Art Alliance will be taken over for the six weeks by this exhibit, which is under the direction of Miss Kathryn Wellman and a large committee. Regular demonstrations by actual occupational therapy patients will be given for the benefit of the public in the various rooms of the Art Alliance. One gallery will house a model occupational therapy shop as might be found in a civilian hospital, with finished and unfinished handicraft on view. Incapacitated patients will demonstrate in this shop every Saturday afternoon, and at that time Miss Wellman will be on hand to answer questions.

In another gallery of the Art Alliance, which will be set up as a functional shop, service patients from the Valley Forge General and the U. S. Naval Hospital will demonstrate the crafts which introduce exercise. These demonstrations will be held on Tuesday afternoons. The Art Alliance's regular Decorator's Gallery will be converted into a modern living room with furniture and furnishings constructed by occupational therapy patients in Army, Navy and civilian institutions. Other exhibitions will feature occupational therapy working materials, finished products, large photographs of patients at work and of their progress, and civilian made articles for sale. During the six weeks, all of the Art Alliance events will center about occupational therapy. These will take in Army and Navy technical discussions, talks on "Design in Salvage," "Muscle Therapy," "Creative Stitchery," "Group Occupational Therapy in Group Psychotherapy," "Occupational Therapy in the Pacific Area," "Rhythmic Exercises for Amputees" and three films from the British Information Service.

OFFICE OF CIVILIAN DEFENSE MEDICAL EQUIPMENT AND SUPPLIES

The Office of Civilian Defense recently issued a release dated February 15, supplementing notice dated July 1, 1943, on the Care and Maintenance of Mobile Medical Team and Casualty Station Equipment, in which it is stated that bonded state and local property officers are both accountable and responsible for federally owned medical supplies and equipment, and when a state or local chief of Emergency Medical Service accepts delivery of supplies and equipment from a property officer he becomes responsible therefor. Responsibility for the distributed supplies is transferred to the persons and institutions receiving them, provided the property officer is notified. A person having custody of federal property will not be held financially liable for its loss or damage unless such loss or damage occurs as a result of his negligence or abuse. Periodic inspections of all medical supplies and equipment should be made by mutual agreement.

The regional medical officer is held responsible for the supervision of U. S. P. H. S. plasma reserves, and property officers have no responsibilities in connection with plasma.

The U. S. Bureau of Narcotics is responsible for inspection of morphine reserves. Chiefs of Emergency Medical Service and property officers will recognize that agency's over-all responsibility for the control of narcotics.

RESPONSIBILITY OF REGIONAL MEDICAL OFFICERS

The regional medical officer will inquire concerning and, when possible, will inspect lent medical equipment, and he will advise the regional property officer concerning the technical care and maintenance of medical equipment. The regional medical officer will advise state chiefs of Emergency Medical Service and through them local chiefs concerning their duties with OCD medical property. The regional medical officer will report to the regional property officer any apparent neglect of federal equipment of which he may have knowledge. The regional medical officer will call to the attention of the state chief of Emergency Medical Service any evidence of ineffective local distribution. During emergency periods the regional medical officer with the approval of the regional director will direct interstate transfer of OCD medical equipment and supplies.

RESPONSIBILITIES OF STATE CHIEFS OF EMERGENCY MEDICAL SERVICE

The state chief of Emergency Medical Service is responsible to the State Defense Council and citizens of the state for taking appropriate steps to see that medical equipment is available and ready for use.

ARMY-NAVY E AWARDED TO ANSCO

AnSCO, Binghamton, N. Y., America's oldest manufacturer of photographic materials, was recently awarded the Army-Navy E for "great accomplishments in the production of war equipment." Since Pearl Harbor approximately 75 per cent of AnSCO's production has been for the government and essential war industries. Its camera plant is now exclusively engaged in the manufacture of precision instruments for the Army Air Forces and the Navy. Included in its wartime production are sextants which permit fliers to determine their position anywhere over the earth's surface under all weather conditions.

AMERICAN RED CROSS SHIPS GAUZE FOR 164 MILLION DRESSINGS

Surgical gauze for 104 million dressings has been requisitioned by the American Red Cross from U. S. Army medical supply depots and will be shipped to approximately two hundred larger Red Cross chapters throughout the country for processing. In addition, gauze for 60 million more surgical dressings has been ordered direct from manufacturers to be shipped to more than one thousand smaller chapters. Volunteers now are producing more than three million dressings daily to provide stocks wherever United States troops are in action. One billion dressings have been produced by the American Red Cross in the past two years.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, April 1, p. 993)

CALIFORNIA

St. Joseph's Hospital, San Francisco. Capacity, 289; admissions, 7,218. Sister M. Raymond, Superior (assistant residents—April 1, July 1).
St. Luke's Hospital, San Francisco. Capacity, 225; admissions, 6,678. Dr. Howard H. Johnson, Director (assistant residents—October 1).

ILLINOIS

St. Francis Hospital, Peoria. Capacity, 593; admissions, 14,093. Sister M. Ancilla, R.N., Superintendent (interns—October 1).

MISSOURI

Alexian Brothers Hospital, St. Louis. Capacity, 176; admissions, 1,976. Brother Athanasius, R.N., Superintendent (resident—April, October 1).

NEW YORK

Cumberland Hospital, Brooklyn. Capacity, 400; admissions, 6,205. Dr. Max Seide, Superintendent (3 interns—October 1).

OHIO

Aultman Hospital, Canton. Capacity, 180; admissions, 6,332. Mr. James W. Stephan, Director (interns, residents).

WASHINGTON

Eastern State Hospital, Medical Lake. Capacity, 2,200; admissions, 614. Dr. M. W. Conway, Superintendent (resident—psychiatry—October 1).

COMMUNITIES IN NEED OF PHYSICIANS

The United States Public Health Service has recently announced that the following four communities have applied for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of \$200,000 for the relocation of physicians:

Hamilton (Harris County), Georgia.
Neosho (Newton County), Missouri.
Pineville (Mecklenburg County), North Carolina.
Star (Montgomery County), North Carolina.

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Indiana University School of Medicine, Indianapolis: Management and Prognosis in Head Injuries, Dr. R. L. Glass, April 10; Investigation of Sterility, Dr. C. P. Huber, April 10.

Dr. Barnard Horton, Rochester, Minn., will speak on his recent studies on multiple sclerosis April 17 in Columbus, Ohio, for the combined medical personnel at Fort Hayes and the Lockbourne Air Base. On April 18 he will present the same subject before the medical personnel at Patterson Field and at Wright Field and the Dayton Academy of Medicine.

INCREASING PENICILLIN PRODUCTION

The War Production Board recently announced that representatives of twenty-one producers have authorized a committee from their industry to explore, with the War Production Board, various forms of agreement for the exchange of technical information and patents in endeavoring to increase penicillin production. The committee is to study possible contract forms and recommend an agreement between producers and WPB, which, it is hoped, may be concluded soon. In granting authority for the explorations of the committee, producers' representatives expressed themselves as desirous of doing everything possible to increase the production of penicillin within the shortest period of time. The committee members are A. H. Friske, Eli Lilly and Company, Indianapolis; H. C. Fritsch, Parke, Davis and Company, Detroit; Carleton H. Palmer, E. R. Squibb & Sons, New York; Dr. John Reichel, Reichel Laboratories, Inc., Kimberton, Pa., and Kenneth H. Hoover, Commercial Solvents Corporation, Terre Haute, Ind.

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

Washington Information Office Established

The resolution of the Council relative to the opening of an Office of Information in Washington, passed at the February meeting and submitted to the Board of Trustees for approval, has received the unanimous sanction of that body.

The office will be under the direction of the Council and Secretary and in direct charge, for the time being, of Dr. Joseph S. Lawrence of Albany, N. Y., who has represented the New York State Medical Society in Albany for over twenty years. A large number of booklets, pamphlets and other published material are being sent to Washington, where they will be readily available to those desiring information concerning the various fields of medicine and the activities of the American Medical Association. The Council will continue its Chicago office as usual, and its semimonthly bulletin will be prepared in that office.

The location of the office in Washington is in suite 900 of the Columbia Medical Building, 1835 I Street Northwest. The date of opening was April 3.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

April 8. "Men with New Faces."

Speaker, Major General D. N. W. Grant, M. C., A. U. S., Air Surgeon A. A. F., Washington, D. C.

April 15. "Decks Aflame."

Speaker, Capt. French Moore (MC), U. S. N., Washington, D. C.

April 22. "Cadet Nurse Recruiting."

From Washington, D. C.

WOMAN'S AUXILIARY

Arkansas

The Allen County auxiliary honored Mrs. L. J. Kominsky, state president, at a luncheon. Mrs. Kominsky discussed the two new national committees, the Doctors' Aid Corps and the War Work Committee. Mrs. William Hibbitts, member of the national board, discussed the Wagner bill.

Colorado

The board of management of the Woman's Auxiliary to the Colorado State Medical Society held its midyear business meeting at the home of the president, Mrs. Lawrence T. Brown, Denver.

The Denver County auxiliary met in January at the Nurses' Home of the Denver General Hospital. Books were contributed to the Nurses' Library.

The Medical Auxiliary of Northeastern Colorado met on January 13. After a business session a review of Josephine Lawrence's book "There is Always Today" was presented.

Florida

At a recent meeting of the Polk County auxiliary the wives of doctors at the Bartow Air Base and Drane Field, and the auxiliary members whose husbands are in service, were honored at a social in Lakeland.

Indiana

The annual guest dinner of the Vigo County auxiliary was held recently. A play was read by Mrs. Grace Moorehead.

Kansas

The Saline County auxiliary recently gave a luncheon in honor of the state president, Mrs. E. E. Tippin of Wichita. Mrs. Oliver Ebel spoke on "Medical Headlines and Oddities."

Rice County auxiliary entertained the Medical Society with a buffet supper recently in Sterling.

Shawnee County auxiliary entertained in January with a dessert luncheon in Topeka. Dr. H. L. Herbert of the Kansas Board of Health discussed "Modern Attacks of Tuberculosis."

The Wyandotte County auxiliary met in January. Dr. W. H. Pickett of the department of health spoke on "Medicine Up to Date." In February the Wyandotte Auxiliary held its annual

Public Relations Test at Bethany Hospital Nurses' Home in Kansas City. Mr. Oliver Ebel, executive secretary of the Sedgwick County Medical Society, was the guest speaker.

The Marshall County auxiliary had election of officers at the February meeting.

Minnesota

The midyear board meeting of the Minnesota auxiliary was held in February. Mrs. F. S. McKinney, state president, organized a new auxiliary, that to the Waseca Medical Society. Mrs. S. C. Oeljen was elected president and Mrs. B. J. Gallegar secretary-treasurer.

Mississippi

Mrs. Temple Ainsworth was made general chairman of arrangements for the state convention of the Central Auxiliary of Mississippi, which will meet in Jackson. Mrs. A. L. Gray is president of the auxiliary. Mrs. R. L. Simmons was elected president of the East Mississippi auxiliary, and Mrs. J. Rice Williams of Huston was elected president of the Northeast Mississippi auxiliary.

South Carolina

The Woman's Auxiliary to Oconee County Medical Society and the Pickens County auxiliary held meetings recently. At both meetings Mrs. D. L. Halford, tuberculosis worker for Oconee and Pickens counties, spoke on tuberculosis work in South Carolina.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

New Jersey

Bill Introduced.—S. 199 proposes to authorize the state department of health, and the local boards of health within their respective jurisdictions, to require any person suspected of being infected with a communicable disease to submit to a medical or roentgenologic or laboratory examination and to permit such specimens of blood and bodily discharges, secretions or excretions to be taken as may be necessary to establish the presence or absence of the disease.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Dr. Roy Kracke Named Dean at Alabama.—Dr. Roy R. Kracke, professor of pathology and bacteriology and chairman of the department at Emory University School of Medicine, Atlanta, Ga., has been named dean of the new Medical College of Alabama to be organized in Birmingham (THE JOURNAL, March 4, p. 658). Dr. Stuart Graves, who has been dean of the two year school at the University of Alabama School of Medicine, University, during the transition period of the development of the two year school into a four year college, will remain as dean of the school of basic medical sciences. He will also continue as an adviser on student health, acceptance of medical students and development of the new medical college. Dr. Kracke was born in Hartselle, Dec. 5, 1897. He attended Alabama Polytechnic Institute, Auburn, and in 1924 received his bachelor's degree from the University of Alabama. He received his degree in medicine at the Rush Medical College in 1928. He spent a year in 1925 at the University of Alabama, University, as instructor in pathology. He later was appointed to Emory University as instructor in pathology, subsequently serving as assistant professor, associate professor and professor of pathology, bacteriology and laboratory medicine. In 1934 he was awarded the certificate of merit by the American Medical Association for his exhibit showing original investigation for his work illustrating the knowledge of etiology of granulocytopenia and in 1935 the gold medal of the American Society of Clinical Pathologists for his work on agranulocytic angina. He has written extensively and is author of "Diseases of the Blood and Atlas of Hematology" (with Hortense Garver). Dr. Graves, who graduated at Syracuse University College of Medicine, New York, in 1911, has been serving as dean and professor of pathology at Alabama since 1928. He was also acting state health officer for Alabama from 1929 to 1930. Prior to joining the faculty of Alabama he had been professor of pathology and bacteriology at the University of Louisville School of Medicine from 1914 to 1928, serving as dean of the medical school from 1922 to 1928. As the plans progressed for the development of the new four year school, Dr. Graves urged the university administration to secure a younger man for the project because of the fact that he was approaching the retirement age.

ARIZONA

State Medical Meeting.—The Arizona State Medical Association will hold its annual meeting at the Hotel Westward Ho in Phoenix, April 14-15, under the presidency of Dr. Otto E. Utsinger, Ray. Members of the faculty of the University of Southern California School of Medicine, Los Angeles, will present the program. On Friday evening a session will be devoted to a discussion of Coccidioides by Drs. Edward M. Butt and Arthur M. Hoffman. Saturday the program will be conducted by Drs. Frederick J. Moore, Philip I. Cummane and Gurth Carpenter.

CALIFORNIA

Joint Session on Tuberculosis.—The California Tuberculosis Association and the California Trudeau Society met at the Biltmore Hotel, Los Angeles, March 28-30. Among the guest speakers were Drs. John Alexander, professor of surgery, University of Michigan Medical School, Ann Arbor, and Henry S. Willis, pathologist and superintendent of William H. Maybury Sanatorium, Northville, Mich. Among the topics to be discussed by the guests were "Practical Considerations Regarding Thoracoplasty" and "Perspective and Trends in Tuberculosis."

Court Issues Writ Restraining State Board in Abortion Case.—The San Francisco Superior Court has ruled that the state board of medical examiners acted illegally when it moved to revoke the license of Dr. Chester D. Sewall, Redding, on a charge of performing two illegal operations, newspapers reported recently. Judge Theresa Meikel issued the ruling on a mandamus action filed on behalf of Dr. Sewall shortly after the medical board on July 1, 1942 declared him guilty on two

counts. Judge Meikel held that a permanent writ would be issued restraining the medical board from proceeding further with the case. A preliminary writ was issued in November 1942.

DELAWARE

Society News.—A symposium on peptic ulcer was presented before the New Castle County Medical Society, Wilmington, March 21 by Drs. Lawrence J. Rigney and John C. Pierson, Wilmington. Major Maurice A. Schnitker, M. C., A. U. S., also addressed the society on "Significance of Ulcer in Armed Forces."

FLORIDA

State Medical Meeting in St. Petersburg.—The seventy-first annual meeting of the Florida Medical Association will be held at St. Petersburg, April 13-14, with headquarters at the Princess Martha Hotel and under the presidency of Dr. Eugene G. Peek, Ocala. Dr. Edgar G. Ballenger, president-elect of the Southern Medical Association, Atlanta, Ga., will address the first general session, Thursday, on "The Relationship of Obstructive Lesions to Urologic Affections." Included among the other speakers will be:

- Capt. Theodore L. L. Soniat, M. C., A. U. S., Psychiatric Experiences in an Army Air Base Hospital.
- Capt. Millard B. White, M. C., A. U. S., Penicillin.
- Capt. Morris B. Guthrie, M. C., A. U. S., Primary Atypical Pneumonia: Analysis of 150 Cases.
- Dr. Duncan T. McEwan, Orlando, Refrigeration Anesthesia of the Extremities: Its Application, Use and Case Reports.
- Lieut. Comdr. Carroll J. Fair (MC), U. S. Naval Reserve, Gynecologic Problems Beginning at Forty.
- Dr. Henry C. Sweany, Chicago, The Challenge of Tuberculosis to the Physician.
- Dr. Walter I. Lillie, Philadelphia, Fundus Changes in Arterial Hypertension.

Specialty groups meeting during the session will include the Florida section of the American College of Physicians, the Florida Society of Ophthalmology and Otolaryngology, the Florida Association of Industrial Surgeons, the Florida Society of Dermatology and Syphilology, the Florida Radiological Society and the Florida Pathological Society. The eighteenth annual meeting of the woman's auxiliary to the state medical society will be held at the Army and Navy Club, April 14.

ILLINOIS

Citizens' Public Health Committee.—A citizens' public health committee was organized in St. Clair County February 22. The new group is educational in nature and will attempt to familiarize citizens with the legislation affecting health units.

Chicago

The Lewis Linn McArthur Lecture.—Dr. Thomas Grier Miller, professor of clinical medicine, University of Pennsylvania School of Medicine, Philadelphia, will present the twentieth Lewis Linn McArthur Lecture of the Frank Billings Foundation, Institute of Medicine of Chicago, at the Palmer House, May 26. His paper will be entitled "Observations on the Human Digestive Tract by Intubation."

Survey Nearing Completion for Medical Center.—The medical center commission named by the state legislature in 1941 to develop a medical center in the area bounded by Congress Street, Roosevelt Road, Ashland and Oakley avenues, is completing a survey of more than 2,200 parcels of privately owned property. A meeting was held March 16 by the commission to discuss plans for expanding the medical center near the Cook County Hospital.

Maternity Center Has New Library.—The Chicago Maternity Center recently dedicated its library, made available by the financial gift of the family of Mrs. Lena K. Witkowsky, for whom the library has been named. The library will be for use of the staff, medical students and nurses. This is the first time in the years since the center was established in 1897 that it has had its own library; the only collection heretofore available was one given by the late Dr. Joseph B. De Lee.

The Capps Prize.—On recommendation of the committee on the Joseph A. Capps Prize, the board of governors of the Institute of Medicine of Chicago announces that no award was made for 1943. Manuscripts for the current competition must be submitted to the secretary of the institute, 86 East Randolph Street, not later than December 31. Competition is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1942 or thereafter. The prize consists of \$400 for the most meritorious investigation in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem.

Lectures on Popular Science.—A series of lectures on popular science and technology is being given at the Museum of Science and Industry, Jackson Park, April 7-May 26. Dr. Milan V. Novak, professor and acting head of the department of bacteriology and public health, University of Illinois College of Medicine, gave the first lecture, on penicillin. Others in the series will include one April 28 by Dr. Ralph W. Gerard, professor of physiology, University of Chicago School of Medicine, on "Biological Aspects of War and Peace" and one May 5 by Dr. Andrew C. Ivy, Nathan Smith Davis professor of physiology and head of the department, Northwestern University Medical School, on "Aviation Calls the Doctor."

Arquin Fund for Clinical Research.—The board of governors of the Institute of Medicine of Chicago has accepted the custody of a memorial fund collected by friends and associates of Dr. Sergius F. Arquin, who died Dec. 8, 1928 as a result of epidemic cerebrospinal meningitis while an intern at Cook County Hospital. The income from the fund is to be used as a prize for investigative work or as a contribution toward the cost of publication or illustration of such work, or for related assistance in clinical research carried on by an intern or resident in Cook County Hospital or other local hospitals. Applications should be addressed to the secretary of the Institute of Medicine of Chicago, 86 East Randolph Street, Chicago 1.

INDIANA

Personal.—Col. Frederick C. Potter, head of the pathology department at Billings General Hospital and for many years associate professor of nervous and mental diseases, Indiana University School of Medicine, Indianapolis, has been granted honorary membership in the Indianapolis Medical Society.—Dr. Robert E. Lyons Jr., formerly a major in the army, who recently received a medical discharge, has reopened his office in Bloomington, where he will resume his private practice.

Physician Honored.—Dr. Bonnelle W. Rhamy, Fort Wayne, was guest of honor at a dinner at the Fort Wayne Country Club, February 10, celebrating his seventieth birthday, February 11. Dr. Rhamy in 1905 opened the Fort Wayne Medical Laboratory, which he has conducted ever since. A congratulatory scroll was presented to the physician, whose work has included the invention of a method of preservation of complement by the addition of sodium acetate, a triple stain for use in staining frozen sections and a method for the cultivation of *Pasteurella tularensis*.

KENTUCKY

Library Named for Physician.—The library in the new \$80,000 Campbell County Health Center, Covington, has been named in honor of Dr. Claude Youtsey, Newport, who died March 5, 1943. At the dedication exercises a life size picture of Dr. Youtsey and a memorial plaque were presented to the center. Dr. Youtsey, as chairman of the county health board for many years, was instrumental in obtaining federal and state aid which made the building of the health center possible, the Covington Post reported March 6.

MAINE

Campaign Against Tuberculosis and Cancer.—The Maine Public Health Association this month is carrying on its annual early diagnosis campaign for the prevention of tuberculosis, and the Maine Division of the Women's Field Army is directing its annual drive for funds for cancer control. The theme for the tuberculosis program for this year, sponsored by the National Tuberculosis Association, is the promotion of chest x-ray examinations for war essential workers.

MICHIGAN

Protein Research.—A new series of studies on protein metabolism will be inaugurated soon at the Wayne University College of Medicine, Detroit, to be carried on under the supervision of Dr. John W. Hirshfeld, assistant professor of surgery, and Arthur H. Smith, Ph.D., professor of physiologic chemistry. The project will be financed by the United States government through the Office of Scientific Research and Development.

Laboratory Services Extended to Include Identification of Paratyphoid.—The laboratories of the state health department in Lansing are now aiding physicians in the state in identifying some of the rarer types of paratyphoid fever. The laboratories are the sixth in the United States to give this service, according to *Michigan Public Health*. Heretofore cultures have been sent by the department to laboratories of the University of Kentucky, Lexington, first in the United States to undertake these studies, it is stated.

Personal.—Dr. Samuel G. Albert, who recently received an honorable discharge from the U. S. Army, has begun the practice of medicine in Ironwood.—Dr. Charles L. Hess, Bay City, has been appointed to succeed Dr. Roy C. Perkins, Bay City, on the state advisory council of health.—Dr. and Mrs. Sherman L. Loupee, Dowagiac, observed their fiftieth wedding anniversary March 5.—Dr. Emily L. Ripka-Hautau, Roscommon, has been chosen health officer of Midland County to succeed Dr. Ralph R. Sachs, who has moved to Richmond, Wash.

Graduate Courses.—On March 9 the annual postgraduate program for graduates in medicine opened under the auspices of the Michigan State Medical Society in cooperation with the University of Michigan Medical School, Ann Arbor, Wayne University College of Medicine, Detroit, the state department of health and the Wayne County Medical Society, Detroit. The various courses will be conducted intermittently until May 26, covering a wide range of subjects. Additional information may be obtained from the committee on postgraduate education, Michigan State Medical Society, Room 2040, University Hospital, Ann Arbor.

MISSISSIPPI

Personal.—Dr. Joseph Howard Beard Jr., Urbana, Ill., has been lent by the U. S. Public Health Service to become health officer of Wilkinson County to succeed Dr. Robert M. Wingard. The latter has been assigned to Mobile, Ala., on a public housing project.—Dr. Samuel E. Eason, New Albany, was recently elected president of the Mississippi State Board of Health, succeeding Dr. James W. Lipscomb, Columbus.

Southwest Allergy Forum.—An informal round table conference will be conducted by the Southwest Allergy Forum in Jackson, April 15-16. Among the leaders in the conference will be:

- Dr. Edley H. Jones, Vicksburg, Vasomotor Rhinitis.
- Dr. Joseph S. Shavin, Shreveport, La., Angioneurotic Edema and Urticaria.
- Dr. Bernard G. Efron, New Orleans, Evaluation of Systemic Reaction.
- William T. Penfound, Ph.D., New Orleans, Pollination of Anemophilous Trees in New Orleans.
- Dr. Ralph Bowen, Houston, Texas, Seasonal Hay Fever Due to Tree Pollens.
- Dr. Homer E. Prince, Houston, Differential Diagnosis of Bronchial Asthma in Infants and Young Children.
- Dr. Herbert J. Rinkel, Kansas City, Mo., Diagnostic Regimen in Food Allergy.
- Dr. Fannie L. B. Leney, Oklahoma City, Practical Consideration of Contact Dermatitis as Seen by the Allergist.
- Dr. Orval R. Withers, Kansas City, Headache as an Allergic Problem.
- Major Lawrence J. Halpin, M. R. C., Treatment of Poison Ivy Dermatitis.

NEW YORK

Fund for Research in Clinical and Preventive Medicine.—An anonymous contribution has been given to Cornell University to endow a scholarship to be known as the Veranus A. Moore Research Fund in honor of the former dean of the state veterinary college in Ithaca. The income from the fund will be used for research in clinical and preventive medicine. Dr. Moore died in 1931.

Graduate Lectures.—The Cortland County Medical Society will be addressed April 21 by Dr. Harold J. Stewart, New York, on "Use of the Electrocardiogram in Heart Disease" and May 19 by Dr. Stearns S. Bullen, Rochester, on "Asthma." Dr. Stockton Kimball, Buffalo, will discuss "Malaria and the Dysenteries" before the Steuben County Medical Society, Corning, April 13. The lectures are part of a cooperative program of the state medical society and the state department of health.

New York City

The Harvey Lecture.—Earl A. Evans Jr., Ph.D., professor of biochemistry, University of Chicago, will deliver the seventh Harvey Society Lecture of the current series at the New York Academy of Medicine, April 20. He will discuss "Carbon Dioxide Fixation in Animal Tissues."

William Henry Welch Lectures.—Dr. Frank C. Mann, Rochester, Minn., delivered the William Henry Welch lectures at Mount Sinai Hospital, April 3-4. His subjects were "Studies on the Dehepatized Animal: A Review" and "Restoration and Pathologic Reactions of the Liver."

Birthday Celebration in Honor of Dr. Castiglioni.—The seventieth birthday of Dr. Arturo Castiglioni, professor of the history of medicine, Yale University School of Medicine, New Haven, and president of the New York Society for Medical History, will be observed at a dinner in the Starlight Roof, Waldorf-Astoria Hotel, April 12. An anniversary

volume will be presented to Dr. Castiglioni as a memento of the occasion. Dr. Castiglioni was born in Trieste, Italy, April 10, 1874. He received his medical degree at the University of Vienna in 1896.

Conference on Convalescence and Rehabilitation.—The second national conference on convalescence and rehabilitation will be held at the New York Academy of Medicine, April 25-26, under the auspices of the committee on public health relations of the academy and the support of the Josiah Macy Jr. Foundation. Representatives of all military services will be included in the program, which will deal with such topics as motivation, retraining, research and the role of home, hospital and industry. Admission will be by invitation. Edward H. L. Corwin, Ph.D., is executive secretary of the academy.

City Hospital and New York Medical College Establish Teaching Affiliation.—A teaching affiliation has been established between the City Hospital of the department of hospitals and the New York Medical College. According to an announcement by Dr. Edward M. Bernecker, city commissioner of hospitals, and Dr. J. A. Werner Hetrick, dean of the New York Medical College, extensive clinical facilities in medicine, surgery, obstetrics, gynecology, neurology and pathology will now be available to students of the medical college. The hospital is located on Welfare Island adjacent to the Metropolitan Hospital, which is also used for teaching purposes by the college. The city hospital was founded in 1832. It now has accommodations for 880 beds, averaging 10,000 admissions a year with an average stay of twenty-three days. About 30 per cent of the patients have chronic diseases. The hospital maintains jointly with the Metropolitan Hospital an outpatient department at 80th Street and East End Avenue. Coincident with the start of the new arrangement is the appointment of a number of physicians to the clinical faculty of the medical college.

Program to Develop Postwar Services at Mount Sinai Hospital.—With the appointment of Dr. George Baehr as director of clinical research and of Dr. Isidore Snapper as director of graduate medical education, a far-reaching program of expansion and reorganization has been launched at Mount Sinai Hospital to prepare for postwar responsibilities. The two positions are newly created ones. While the new appointments are the first steps in the program of expansion, later developments will include enlargement of the hospital's clinical and laboratory facilities and the creation of a number of full time paid fellowships for promising young physicians and research workers. Mount Sinai began its work as a teaching institution in 1872, when the first interns were appointed to its house staff. In 1910 the hospital began undergraduate medical instruction, opening its facilities to students of the Columbia University College of Physicians and Surgeons. In 1923 this affiliation was expanded to postgraduate teaching and placed on a formal basis. The faculty of the hospital's department of graduate medical instruction, which Dr. Snapper will head, consists of about 120 members of the Mount Sinai staff, many of whom are also members of the Columbia faculty. Dr. Baehr, under the new title of director of clinical research, will coordinate all the clinical research activities at the hospital, to gear them to the work of the laboratories and to bring about the most productive use of the institution's facilities. Dr. Baehr, until recently chief medical officer, U. S. Office of Civilian Defense, and formerly president of the hospital's medical board, has, in addition to the new position, returned to Mount Sinai as attending physician to the First Medical Service. Dr. Snapper, who formerly served on the faculties of the University of Amsterdam and the University of Peiping, has been appointed attending physician to the hospital's Second Medical Service. He was for nineteen years professor of propaedeutic medicine and general pathology at the University of Amsterdam. He later served as professor of medicine at the Peiping Union Medical College. After his arrest by the Japanese Army on Dec. 7, 1941 Dr. Snapper was later, in 1942, exchanged for five Japanese internees. In 1943 he went to the Netherlands West Indies on a special mission for the Netherlands government and later became consultant to the United States War Department, assigned to the office of the Surgeon General of the Army in Washington, D. C. He was also medical adviser to the commissioners of the Netherlands Indies, Surinam and Curaçao.

Bellevue Hospital Rapid Treatment Center Dedicated.—The dedication of the Bellevue Hospital rapid treatment center for controlling the spread of venereal diseases by the most advanced methods of therapy in syphilis and gonorrhea took place on April 1 with Mayor Fiorello H. LaGuardia giving the principal address. The center has been made possible through the cooperation of the Federal Works Agency and the U. S. Public Health Service. Lanham Act funds totaling

\$575,000 were allocated for the project. Federal maintenance will continue for the duration, but after the war the city department of hospitals will have the benefit of the construction and equipment, with the city providing funds for staff and maintenance. For syphilis the treatment will be in general arsenotherapy combined with fever. When and if penicillin is available, it will be used. For gonorrhea patients sulfonamide drugs will be used. Fever therapy will be used for those patients who do not respond to the sulfonamide drugs. The U. S. Public Health Service has assigned Cornelius T. Stepita, surgeon, U. S. P. H. S., as administrator of the treatment center under the direction of the medical superintendent of Bellevue Hospital, Dr. William F. Jacobs. The U. S. Public Health Service has also assigned a charge nurse and a record analyst. The maintenance and operation budget supplied through the Federal Works Agency provides for some 150 employees, including nurses, dietitians, medical social workers, educational and recreational staff, laboratory workers, hospital helpers, clerical staff and maintenance workers. Dr. Evan W. Thomas, chief syphilologist at Bellevue Hospital, and Dr. Alfred Cohn, in charge of gonococcus research for the department of health, will direct the treatment of patients, and all necessary medical, surgical and specialty consultations will be by the Bellevue Hospital visiting staff. There will be both an inpatient and an outpatient service at Bellevue which will have a 200 bed capacity. The building being utilized for the treatment center is the south wing of the six story pathology building, formerly used as a male dormitory for Bellevue Hospital employees. Reconstruction and remodeling work under the direction of the department of public works began last December. A rehabilitation program, to be conducted in buildings of the former Convalescent Day Camp on Welfare Island, is part of the rapid treatment center project. This will also be on twenty-four hour service with a 100 bed capacity and operated in conjunction with the board of education. The program will include vocational courses especially aimed at employment in war industries and recreational facilities for patients. After-care supervision will be the responsibility of medical social workers. Psychiatric service where necessary will be provided by Bellevue Hospital.

NORTH CAROLINA

Personal.—Fred W. Ellis, Ph.D., formerly associate in pharmacology at Jefferson Medical College of Philadelphia, has been appointed assistant professor of pharmacology in the University of North Carolina School of Medicine, Chapel Hill. —Dr. Frederick D. Austin Jr., Charlotte, coroner of Mecklenburg County, has entered military service.

Tri-State Meeting.—Dr. George H. Bunch, Columbia, S. C., was chosen president elect of the Tri-State Medical Association composed of North and South Carolina, Virginia, at its meeting in Charlotte, February 29, and Dr. Karl B. Pace, Greenville, was installed as president. Dr. Pace succeeds Dr. Frank S. Johns, Richmond, Va. Other officers include Dr. Oscar B. Darden, Richmond, and Richard B. Davis, Greensboro, vice presidents, and Dr. James M. Northington, Charlotte, secretary-treasurer. The association voted to hold its 1945 convention in Columbia.

OHIO

Selman Lecture.—Col. Richard P. Strong, director of tropical medicine, Army Medical School, Washington, D. C., delivered the Julius J. Selman Lecture at Mount Sinai Hospital, Cleveland, March 13, on "Tropical Diseases in Relation to the Present War."

Graduate Course.—The eighth annual graduate course in otology, rhinology and laryngology, University of Cincinnati College of Medicine, will be held May 15-20. This course is to be given by the department of otology and anatomy and is a refresher course for practicing otolaryngologists either in or out of the armed forces.

OREGON

Memorial Fund for Physician Who Died at Guadalcanal.—A memorial fund of \$600, contributed by friends of the late Lieut. Comdr. Joseph Lipschutz (MC), U. S. Naval Reserve, has been given to the University of Oregon Medical School, Portland, by his wife, Mrs. Ruth Lipschutz. Principal and interest of the fund will be used over a ten year period in granting awards to fourth year medical students writing the best essay in the field of pediatrics. The fund honors Dr. Lipschutz, formerly clinical instructor of pediatrics at the school, who met death while serving with the Navy in the Guadalcanal campaign.

PENNSYLVANIA

Course on Industrial Medicine.—The Lackawanna County Medical Society recently sponsored a course of ten sessions reviewing the subjects of industrial medicine and hygiene. The course was given under the direction of Lieut. Col. Arthur P. Hitchens, U. S. Army retired, George S. Pepper professor of preventive medicine and public health, University of Pennsylvania School of Medicine, Philadelphia. The program included speakers from the U. S. Public Health Service, including Medical Director Louis Schwartz, on "Occupational Dermatoses"; Principal Statistician William M. Gafafer, "Maintenance of Manpower," and Associate Statistician Hugh P. Brinton, "Women in Industry." In addition there were a number of speakers from various state departments in Pennsylvania.

Philadelphia

Dr. Landis to Lecture at Pennsylvania.—Dr. Eugene M. Landis, George Higginson professor of physiology at Harvard Medical School, Boston, will deliver the fourth annual Phi Delta Epsilon Honor Lecture at the University of Pennsylvania School of Medicine, April 14. His subject will be "A Comparison of the Clinical Tests of Kidney Function."

Course in Tropical Diseases.—The department of public health and preventive medicine, University of Pennsylvania School of Medicine, will inaugurate a Saturday afternoon course April 8 on epidemiology. Physicians and others interested may attend the course, which will place emphasis on the epidemiology of tropical diseases. *Philadelphia Medicine* reports that the tropical medicine section of the course is being organized so that the new sixth edition of the work on tropical diseases of Rear Admiral Edward R. Stitt, surgeon general, U. S. Navy, retired, prepared by Col. Richard P. Strong, M. C., A. U. S., will be used to guide and supplement the course.

Pittsburgh

Course in Tropical Diseases.—The committee on graduate education of the Allegheny County Medical Society is sponsoring a course on parasitology and tropical diseases for practicing physicians. The course will include a series of eight lectures to be given by Dr. Evelyn L. Heller, instructor in pathology, University of Pittsburgh School of Medicine. The lectures began April 5 and continue through May 24.

TEXAS

Council Created for Group Service Plan.—A new council on hospital service plans was recently organized in Texas to aid the expansion of group hospital service of Texas, to make recommendations relative to this work through the Texas Hospital Association, to advise with group hospital service and to coordinate the council activities with the administration of group hospital service. Mr. Lawrence Payne, superintendent of Baylor University Hospital, Dallas, is chairman.

University News.—The University of Texas Medical Branch, Galveston, has received a grant of \$2,400 from Frederick Stearns and Company, Detroit, to support a fellowship in pharmacology. A similar grant from the Bilhuber-Knoll Company of Orange, N. J., has also been given toward a fellowship in pharmacology. Recent appointments to the faculty of Baylor University College of Medicine, Houston, include John H. Perry, Ph.D., as assistant professor of anatomy, Dr. Paul A. Wheeler, associate professor of pathology, and Samuel Earl Kerr, lieutenant in the medical corps, Army of the United States, instructor in pathology.

UTAH

Dr. Ogilvie Resigns.—Dr. Orin A. Ogilvie has resigned as professor of bacteriology and pathology at the University of Utah School of Medicine, Salt Lake City, effective March 11.

VERMONT

University News.—A grant of \$1,500 has been made to Dr. Louis S. Goodman, professor of pharmacology and physiology at the University of Vermont College of Medicine, Burlington, by the Abbott Laboratories, North Chicago, Ill., for the study of synthetic anticonvulsants and analgesics. Corrine Manuel, B.S., M.T., has been appointed research assistant in the department of pharmacology and physiology.

VIRGINIA

Changes in Health Officers.—Dr. Thomas Scarlett, health officer of Harrisonburg, resigned, effective February 12, to enter military service.—Dr. Thomas F. McGough Jr., health officer of Pulaski-Wythe Health District, Pulaski, resigned effective February 16 to enter military service.—Dr. Daniel C. Steelsmith, health officer of Halifax-Pittsylvania Health District, South Boston, has resigned effective April 1.

WASHINGTON

New Director of Venereal Control.—Edwin N. Heschbacher, assistant surgeon, U. S. Public Health Service, has been appointed director of venereal disease control of the Seattle Health Department. He succeeds Dr. Burton L. Zinnamon, who has been transferred to Oakland, Calif.

City Creates Post of Municipal Psychologist.—The Seattle city council has been asked to establish a new municipal civil service position of psychologist to be used in connection with the treatment of women with venereal disease. According to *Northwest Medicine*, it was stated that the salary would be paid by the Federal Works Agency. Besides making a study of these patients, the psychologist would assist the social worker in placing them in industry.

Hospital News.—A gift of 81 acres in West Seattle by the King County commissioners to the federal government for the establishment of a veterans' hospital has been rejected because additional veterans construction in Washington is not under consideration.—The new Franklin D. Roosevelt Hospital, Bremerton, constructed at a cost of nearly \$1,000,000 from government funds, has been recently opened. It is county sponsored but will not be operated as a charity institution.

WEST VIRGINIA

Impostor Turns to Industrial Practice.—"Dr." Samuel Seymour Liebowitz, alias Charles Freeman Krueger, alias Samuel Seymour Strauss, has reappeared in West Virginia, seeking work as an assistant in industrial medical practice in the coal fields near Charleston. In his application, Liebowitz stated that he was a graduate of a foreign school, had taken his junior and senior years in medicine at the University of Pennsylvania and was licensed in Missouri and New York. He said further that he was a member of the staff of Spencer State Hospital (mental) at Spencer and that the public health council had given him a special permit to practice at that institution. An investigation by the West Virginia State Medical Association disclosed that no person by the name of Liebowitz had been connected with the Spencer institution and that no special permit to practice had been granted by the public health council to a doctor of that name. A physician at the coal fields ordered Liebowitz out of West Virginia. Liebowitz, on being advised to get out of the state, left the coal fields immediately but on March 21 turned up in Charleston on some trivial pretext in the offices of the state medical association. After considerable questioning, he admitted that he was "the same Liebowitz who 'practiced' in the coal fields of West Virginia in 1940 under the name of 'Dr. S. S. Strauss,' posing as a graduate of Long Island College of Medicine, Brooklyn, and as a regularly licensed physician in West Virginia. He also admitted that he had served time in the federal reformatory at Chillicothe, the Northwestern Penitentiary at Lewisburg, Pa., the U. S. Penitentiary at Atlanta and the U. S. Penitentiary at Terre Haute, Ind. The federal court records in West Virginia show that at the March 1941 term of the U. S. District Court for the northern district, at Parkersburg, Liebowitz was convicted on a charge of falsely and incorrectly registering for the draft and sentenced to serve two years at Atlanta. He states that he was later transferred to Terre Haute. He was paroled from the Terre Haute prison Oct. 26, 1942 and placed under the jurisdiction of the U. S. probation officer at South Bend, Ind. His conviction at Parkersburg in 1941 followed months of posing as a doctor and 'practicing' in various parts of the country, including relief work in many towns in the coal fields in West Virginia." A report of a thorough investigation by federal officers to the West Virginia State Medical Association revealed that Liebowitz had had no medical training whatever but had worked as an orderly in federal reformatory hospitals. "Liebowitz, while freely admitting the truth of most of the evidence with which he was confronted, stoutly maintained that he is a graduate of the 'University of Vienna,' class of 1939, and that he had interned at 'Westminster Hospital, London,' in 1940, coming to the United States in March 1940. He stated that he had had several jobs since his parole from Terre Haute, working in Whiting, Ind., and at Louisville, Ky. He said he came back to West Virginia because he had no work and because he is 'qualified to practice medicine in the coal fields.'" At the time of his visit to the offices of the state medical association he was advised to leave West Virginia without delay. Exhibiting a bus ticket, he stated he had decided to get work on a farm and was leaving that afternoon for Philadelphia. Members of the medical profession in West Virginia are requested to watch for "Dr." Liebowitz and to notify Dr. John E. Offner, state health commissioner and secretary of the public health council, if he should turn up in their community. Liebowitz first appeared at the headquarters of the

state medical association in 1940, giving his name as S. S. Strauss and saying that he was a graduate of the Long Island College of Medicine and that he was licensed to practice in West Virginia. He obtained positions doing relief work in various towns in the coal fields but disappeared when it became known that he was not licensed and had not graduated from the Long Island College. In Kingwood, state police took him in custody as a suspicious character and discovered that, while his automobile license was in the name of Samuel Strauss, his draft registration card bore the name Kreiger. The police notified the U. S. Department of Justice, which sent back a police record dating from 1933. He has used various aliases, including Seymour Rothchild, Seymour Davis Strauss, Milton Fenberg, Seymour Strauss, Samuel Liebowitz and Samuel Seymour Strauss. His activities had been carried on in a number of states and his sentences included terms in various penal institutions for using the mails to defraud and one for vagrancy.

GENERAL

Society News.—The American Association for the Advancement of Science will hold its 111th annual meeting in Cleveland, September 11-16.

Cumulative Index of Radiology.—The Radiological Society of North America has just issued a cumulative index of its official publication, *Radiology*, covering the years 1923-1942, volumes 1-39. In the organization of the index the *Quarterly Cumulative Index Medicus*, published by the American Medical Association, has been used as a pattern.

Orthoptic Examinations.—The American Orthoptic Council announces that applications for the next examinations must be received before August 1. The written examinations will be held in various cities throughout the country on September 7. Only those passing the written examinations will be permitted to take the oral and practical tests, to be given in Chicago on October 7. The address of the council is 23 East 79th Street, New York 21.

New Managing Director for Society for the Hard of Hearing.—Mr. Raymond H. Greenman, formerly executive secretary of the Tuberculosis and Health Association of Rochester and Monroe County, New York, has left a war assignment with the American Social Hygiene Association to become managing director of the American Society for the Hard of Hearing, Washington, D. C. Mr. Greenman succeeds Miss Betty C. Wright, who is on a three months leave of absence from the society to serve with the American Red Cross as consultant in three army hospitals for the special care of deafened soldiers. Miss Wright will return to the society in August as director of field service. The society also announces that it is embarking on a war activity aimed to meet, through the cooperation of its 121 local chapters, the rehabilitation needs of the war deafened soldiers. The society will observe its twenty-fifth anniversary this year.

Tropical Medicine News.—The first issue of *Tropical Medicine News*, published by the American Society of Tropical Medicine, made its appearance with the February issue. The bulletin is aimed to keep members in touch with happenings within the society and will appear bimonthly during the months when the *American Journal of Tropical Medicine*, the official organ of the society, also a bimonthly publication, is not published. The *News* has been so planned that it will be self supporting as the result of pharmaceutical advertising. The notices of three firms are to appear in alternating position on the back cover and the inside cover pages of each issue. The space for the six issues of 1944 has been purchased by Eli Lilly & Company, G. D. Searle & Company and John Wyeth & Brother, Inc. The cover of the *News* is the work of the art department of Tulane University of Louisiana School of Medicine, New Orleans, and has been adopted from the seal of the society. The seal itself depicts a seated Roman goddess, in a tropical setting, who extends the lamp of knowledge to the serpent, the symbol of healing. The anopheline mosquito, the scorpion and the leaves and open flower of *Cinchona ledgeriana* have been added at the base of the seal, and the motto of the society, *Salus in Tropica*, has been retained. The first issue contains a report of the 1943 meeting of the society, clinical and research notes, news items and a list of the officers.

LATIN AMERICA

Health Activities in Latin America.—*Brazil Supervises Penicillin Manufacture.*—The manufacture of penicillin was placed under government supervision and its export was prohibited on March 8 by President Getulio Vargas, the *New York Times* reported. It was stated that a few days before a large consignment was found at Rio Grande do Sul on an airplane bound for Argentina. Recently Brazil sent penicillin

to Spain, the United States and Great Britain. The drug is produced in both Rio de Janeiro and São Paulo states. On March 8 the government also voted \$200,000 to increase production.

Society News.—New officers of the Sociedad Cubana de Urología include Drs. José A. Hernández, Ibañez, president; Luis F. Ajamil, vice president; Ramiro de la Riva and Luis Hernández Hernández, secretaries, and Ernesto Puget and Gabriel Vandama, treasurers.

Assistance in Venereal Care.—On March 14 the executive council of Puerto Rico adopted a resolution accepting the offer of the United States of America to contribute to the people of Puerto Rico (\$167,632) for the maintenance and operation of venereal disease hospital facilities at Cayey, Maricao, Caguas and Finca Troche. The gift will extend through June 30.

Personal.—Lieut. Col. Edgar Tostes, Panair do Brasil, head of the Aeronautical Hospital, Brazil, was recently awarded the diploma of honor of the Association of Military Surgeons of the United States in recognition of his "outstanding contribution to military medical care in the Western Hemisphere," according to an announcement from the Pan American Airways System.

FOREIGN

Personal.—On January 13 Sir Henry H. Dale, president of the Royal Society and director of the laboratories of the Royal Institution, London, was presented with the Hanbury Memorial Medal of the British Pharmaceutical Society. The honorary gold medal of the Royal College of Surgeons, London, was presented at the Buckston Browne luncheon at the college on February 12 to W. H. Collins, chairman of King Edward VII Hospital, Windsor, in recognition of his gift of £100,000 (*THE JOURNAL*, Nov. 27, 1943, p. 851) to endow the department of pathology, with provision for a further like sum to extend and develop the department of pathology at Lincoln's Inn Fields and to found there a chair of human and comparative pathology. The Rockefeller Foundation has made an appropriation of £1,200 for biochemical investigations of penicillin under the direction of Howard Walter Florey Ph.D., professor of pathology at the University of Oxford.

King's Physician Terms Health Plan "Despotism."—The King's physician, Viscount Dawson of Penn, asserted in the House of Lords, London, that "signs of the new despotism" were in the White Paper outlining the health scheme recently presented to Parliament (*THE JOURNAL*, March 18, p. 789). According to the *New York Times* the debate in the two houses of Parliament was initiated on motions indicating the government's intention to establish a comprehensive health program. The purpose of the debate, it was stated, was to obtain criticisms of the plan before drafting a bill to effectuate it. The *Times* stated that criticisms came in a downpour, especially from some of the eighteen doctors in the two houses. The suggestion was made that the doctors would be assigned "beats like a policeman or a postman and paid like schoolmasters." In the House of Commons, the *Times* continued, Minister of Health Henry U. Willink commenced discussion with a conciliatory speech aimed at placating those doctors who regard the plan as a threat to their independence. "No one, patient or doctor, must be dragooned into any part of this service," Mr. Willink said. He assured the House that the government did not intend to regiment doctors, prohibit private practice or eliminate voluntary hospitals—that is, hospitals supported by public contributions. The doctors disagreed violently in the ensuing argument, it was stated. Sir Ernest G. Graham-Little, internationally known skin specialist, asserted, despite a tart challenge from Dr. Edith C. Summerskill, vice president of the Socialist Medical Association, that the "vast majority" of doctors who must operate the scheme would be "intensely resentful of the conditions imposed on them." Dr. Leslie Haden Guest, demanding removal of commercialism from the profession, also denied Sir Ernest's claim to represent a large part of the medical profession, and Mr. Alexander G. Walkden said to Mr. Willink "Young doctors welcome your scheme." Replying to a government statement by Lord Woolton, minister of reconstruction, Lord Dawson criticized the way in which the White Paper seemed to introduce a salaried service for doctors and said that civil service control would mean "goodbye to the best that medicine can do." Mr. Willink described the plan as the "biggest single advance ever made in this country in the sphere of public health"—a scheme to make the whole range of health care available to every person, the cost to be shared by the beneficiaries and the taxpayers.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 4, 1944.

The Medical Press and the National Health Service

A qualified welcome is given by the *British Medical Journal* to the government plan for a national health service. The recent white paper on this subject is characterized by the *British Medical Journal* as well written and for the most part unambiguous. For the moment, those who are opposed to a whole time salaried state medical service have had their fears allayed. But the suggestion that a central medical board should have power to prevent doctors from entering an "overdoctored" area and that no one should practice anywhere without first obtaining permission of the board, a civil service structure, is held to be more than a hint of authoritarianism. The white paper states that "the board must be able to require the young doctor during the early years of his career to give his full time to the public service where the needs of the service require this." This seems to conflict with the principle of "no compulsion into the new service of either patient or doctor." The *British Medical Journal* sees in the white paper the unmistakable direction in which the government is moving—toward the institution of a whole time salaried service, with the proviso that private practice shall not be denied to those who want it and that doctors in the public service may provide it. "It is difficult to see how, in the kind of evolutionary changes which are so persuasively outlined, private practice as we know it today can survive much more than as a shadow of itself. Our contemporary detects a thread of argument and development leading in a direction which the profession refuses and will refuse to follow—that of whole time salaried service under the state," it is declared.

The *Lancet* also welcomes the white paper and characterizes the scheme as "bold as well as reasonable." It holds that "within the framework suggested it would be possible soon to increase the value of medical knowledge to the public, to give most doctors more satisfaction in their work, and in doing so to prepare the way for a really fine service in the years to come." The new service must set itself from the first to make more economical use of the doctors available, the *Lancet* says. This, it is held, can be achieved only by rapid development of the health centers, which would do something to conserve the doctor's time and energy.

New Cooperative Program of British Empire Cancer Campaign

One of the most important duties of the British Empire Cancer Campaign has been to review new suggestions as to the cause and treatment of cancer. In the past, the conclusions formed have not always reached the medical profession. The campaign has now expressed its willingness to give its opinion on any new form of treatment on which it has information. It will continue to investigate methods of treatment and theories of causation and is willing to undertake or promote research into these, provided the following conditions are fulfilled: 1. That in the opinion of the appropriate expert committee of the campaign the subject offers any prospect of advancing the solution of the cancer problem. 2. That the fact that a theory or suggested treatment is being investigated by the British Empire Cancer Campaign shall be disclosed only with the consent of the campaign. This condition seems to be laid down to prevent exploitation of the fact that an alleged remedy is being investigated by the campaign. 3. That the campaign reserves

to itself the right to publish in an appropriate manner the conclusions reached, whether favorable or unfavorable. 4. That in the case of theories concerning causation all available information shall be furnished by the advocate of the theory on the scientific basis and the experimental data, which shall be so detailed that exact repetition of the experiments can be carried out by experts in the field concerned. 5. That in the case of methods of treatment the precise nature, composition and method of administration shall be disclosed and the evidence shall be collected in accordance with safeguards as to scientific accuracy which experience has shown to be essential, namely (a) that cases shall be of proved cancer as far as proof is practicable, preferably by microscopic examination (if possible also they should be cases affecting accessible organs such as the skin, breast, cervix uteri and mouth), (b) that every case treated shall be recorded whether the result is favorable or otherwise, and (c) that clinical records, including follow-up, shall be as full as possible. 6. That in the case of treatment based on experiments the campaign reserves to itself the right to confirm the results of such experiments before attempting clinical trials of the remedy. The campaign also announces that it will be happy to arrange for physicians to discuss their hypotheses and experiences with appropriate experts. The address of the campaign offices is 11 Grosvenor Crescent, London S.W. 1.

Special Investigation of Diseases and Care of the Aged

Two important changes are evident in the British population: a fall in its rate of increase, with a decrease imminent, and an increase in the average length of life. At the beginning of the century 2,250,000, or 1 in 17 of the population, were of pensionable age (65 for men and 60 for women). By 1941 this figure had risen to 5,500,000, and it is calculated that by 1961 it will be over 8,000,000, or 1 in 6 of the population. These facts provide a serious problem for our public health authorities in their care of the aged. The Nuffield Foundation trustees are undertaking a survey of the problems of aging and the care of old persons. The Ministry of Health has warmly welcomed the proposal and will cooperate. The object of the survey is to collect and collate information on (1) the problems, individual, social and medical, associated with aging and old age, (2) the work being done by public authorities and voluntary organizations and the public and private resources that exist for the care and comfort of the old, (3) the provision made for old persons in other countries which have given special consideration to the problem, (4) medical research on the causes and results of aging and (5) the lines on which action might be usefully taken in the future by public authorities and private organizations, including the Nuffield Foundation. Questions of medical research will be considered by a special subcommittee of leading physicians.

It is remarkable that while the diseases of children have, rightly, received a great deal of attention, those of persons at the other end of life have not been similarly investigated. Much of course is known about the pathologic changes in the aged, but the trustees hold that in questions of aging and the care of the aged there is lack of collated information of a comprehensive and authoritative nature. This militates against proper appreciation of the problems involved and hinders the search for adequate solutions. The survey now undertaken should lead to an important contribution to better understanding of a social problem which will inevitably occupy an increasingly important place in public thought and policy. It will also provide the Nuffield Foundation with a proper basis on which to decide its future action with regard to the care of old persons. The present population trend has already influenced mortality statistics. Certain diseases of the elderly, such as cancer, already show an absolute increase in number.

A Modern Hospital and Medical School for Ethiopia

During the years 1936 to 1941, when Italy exerted an uneasy rule over Ethiopia, the emperor lived in England. His daughter, Princess Tsahai, undertook training as a nurse at our principal children's hospital, the Hospital for Sick Children, on Great Ormond Street. After passing the examinations qualifying her as a nurse, she entered Guy's Hospital for further training. Her object was to fit herself to lead a movement for establishing a modern nursing service in Ethiopia when its freedom was regained. But, unfortunately, she died in 1942, at the age of 22. An appeal is now being made for funds to found in Ethiopia a modern hospital and medical school in her memory as a token of good will from the people of Britain. The appeal is supported by the leaders of the medical and nursing professions.

BRAZIL

(From Our Regular Correspondent)

Feb. 20, 1944.

Low Cost Collective Feeding

As a result principally of continued effort by modern physicians in Brazil, the eating habits of the population are being changed for the better; old, unbalanced and incomplete diets are being abandoned and new customs are being created, especially among the higher classes. This was and still is a recognized necessity, because the Brazilian common diet is, as a rule, defective, monotonous and insufficient for the active life that a large part of the population is now beginning to adopt. Some aspects of this problem may be grasped from a paper that has just been published by Drs. Olavo Rocha and J. Fleiuss, in which they describe their work to organize, on a modern basis, the furnishing of more than a million meals to some 2,000 workers at the Fabrica Nacional de Motores, the Brazilian national airplane motor factory located in a distant suburb of the city of Rio de Janeiro. The cost of the meals is considered rather low (roughly corresponding to 10 cents per meal), if present war conditions are taken into consideration. The task of furnishing the meals had been previously given to a nutrition and social welfare organization which is pioneering in the difficult field of furnishing low cost, collective feeding of proper quality. The meals were sent to the factory in thermal trucks. Despite the fact that the food supplied was prepared with the best quality of foodstuffs and had excellent appearance, quite unexpectedly at the end of about a month the workers and even the administrative staff of the factory began to complain about the food, showing some degree of aversion toward it. Some of the results of the study made by Drs. Rocha and Fleiuss of the causes of this intolerance and the measures taken to correct them are summarized here.

The so-called rational diets of the welfare organization were generally based on calory calculations and on the minimum protein, vitamin and mineral salt content, little emphasis being put on the taste and variety of the foods. In the effort to organize scientific and balanced diets, the menus departed too far from the eating habits of Brazilian workers, it was found, and were typically monotonous. The authors convinced the management of the factory that the meals should be prepared at its site. Within the list of foods most readily found in the market and most commonly in use, they planned a great variety of menus. They recognized the fundamental importance, in collective feeding, of the taste of the food, which in large part depends on flavoring and seasoning, a factor which plays a prominent part in the digestibility of the food. The authors suggested that the flavoring might not be limited to the habitual seasonings—salt, vinegar, garlic, onion, tomato and tomato catsup—used in the dishes furnished by the organization. They proposed to increase the amounts of these seasonings four and five times. In the food prepared at the factory, these seasoning agents have

reached the daily amounts per person of garlic 1 Gm., onion 10 Gm., tomato 8 Gm. and vinegar 5.5 cc. They suggested further that other flavorings, like laurel leaves, parsley, pimento and annato seeds (*Bixa orellana*), be used. It is to be noted that this practice did not materially increase the number of digestive disturbances. The only important reactions were registered in connection with a small number of workers presenting some kind of allergy or with organic lesions of the digestive or circulatory systems (hyperchlorhydria with or without peptic ulcers, biliary troubles, chronic colitis [mainly amebic] and hypertension with some degree of nitrogen retention).

All the meals furnished by the social welfare organization included a glass of milk, which the workers were not accustomed to take at lunch and dinner time. Most of the workers do not like to take milk at all; they even regard it with aversion, saying that it is "a food for sick men, for weak men, for frail girls, for women in childbed" and not suitable for "full grown men, strong men, men who have to do hard work." But as a result of this educational effort the workers are being trained to take milk with the morning coffee.

The authors state that the correction of the monotony of the diet and the increase in the seasoning of the dishes have accounted for a decided improvement in the acceptance of the food. Thus adequate amounts of food are now enjoyed, as well as proper quality, a fact that is a feature of the present system of feeding workers at the factory.

The Death of Fernando Magalhães

Dr. Fernando Magalhães, professor of obstetrics at the University of Rio de Janeiro, died a few days ago at the age of 64. He was one of the leading medical men of Brazil and was considered the pioneer of modern obstetrics in this country. He was still young when he took the full professorship of obstetrics at the university, after a competitive selection which aroused great interest in medical circles at the time. He was also elected a member of the Brazilian Academy of Medicine, the highest professional association, constituted, as a rule, by the elder representatives of the principal medical specialties in the country. He was actually a reformer of obstetrics in Brazil, not only by his teaching in the principal medical school of the country but, mainly, as the leader of a campaign to introduce the use of the best technic in his specialty. The modern treatment of puerperal sepsis, the use of cesarean section when necessary, the problem of painless childbirth, the right conduct in case of placenta previa, cancer of the uterus, correct forceps technic—these are some of the problems to which he devoted his best efforts. He was an open minded physician and a courageous fighter for his professional ideals. In 1918 he founded the Pro-Matre Hospital, a modern private maternity hospital where he had the best field for his studies and teachings and where many leading obstetricians of the present time began their careers. One of his students, Dr. C. Correa da Costa, is now director of the Arthur Bernardes Maternity, where he has achieved spectacular results in the control of puerperal sepsis by applying the principles taught by Dr. Magalhães.

Marriages

WILLIAM R. DANDRIDGE, Charlottesville, Va., to Miss Hetty Wray Hurd of Martinsville in Strasburg, March 3.

OLIVER BRYSON WINGO to Miss Dorothy Bartlett, both of Birmingham, Ala., in Scottsboro recently.

CHARLES L. BENSON, Tamaqua, Pa., to Miss Marjorie J. Duffy of East Mauch Chunk, January 1.

EARL L. LOYD, Salina, Kan., to Miss Margaret Elizabeth Stevens of Minneapolis in February.

Deaths

Robert Anthony Hatcher Ⓢ Flushing, N. Y., noted pharmacologist, died April 1 of angina pectoris, aged 76.

Dr. Hatcher was born in New Madrid, Mo., Feb. 6, 1868. He received his Ph.G. at the Philadelphia College of Pharmacy in 1889, graduating at Tulane University of Louisiana School of Medicine, New Orleans, in 1898. Honorary degrees that were later conferred on him included the master in pharmacy from his alma mater and a doctor of science in pharmacy from Columbia University. He was professor of materia medica at the Cleveland School of Pharmacy, 1899-1904, and demonstrator of pharmacology at Western Reserve University School of Medicine, Cleveland, 1901-1903. He went to Cornell University Medical College as instructor in pharmacology in 1904; he was assistant professor of pharmacology and materia medica there from 1906 to 1908 and professor from 1908 until 1935, when he became professor emeritus.

At the time of his death Dr. Hatcher was one of the few remaining charter members of the Council on Pharmacy and Chemistry of the American Medical Association. He had served continuously as a member of the Council since 1905, when it was created. In 1943, when he retired at the age of 75, the Board of Trustees of the American Medical Association made him an honorary life member, the first member of the Council ever to receive this recognition. He was chairman of the Section on Pharmacology and Therapeutics of the American Medical Association from 1915 to 1916 and a member of the House of Delegates of the Association in 1917.

Dr. Hatcher was a recognized authority on digitalis. Much of the success of the Council on Pharmacy and Chemistry is attributed to his efforts. Up until the time of his retirement in 1943 he was constantly busy with the preparation and editing of reports, retaining the interest that had made him an able influence in the development of the Council.

His contributions in the field of research and education are widely known. Dr. Hatcher was a member of a number of scientific groups including the American Association for the Advancement of Science, the American Pharmaceutical Association, the American Physiological Society, the American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics and the Harvey Society. Included among his many writings were the "Textbook of Materia Medica," of which Dr. Torald H. Sollmann was co-author, 1904, and "Pharmacology of Useful Drugs" (with M. I. Wilbert) 1915. He served for a time as editor of Useful Drugs.

Morris Manges Ⓢ New York; College of Physicians and Surgeons, New York, 1887; member of the American Climatological Association, New York Pathological Society, American Gastro-Enterological Association, Harvey Society, American Association for the Advancement of Science, Archeological Institute of America and Oriental Institute of the University of Chicago; fellow of the New York Academy of Medicine; professor of clinical medicine at the New York Polyclinic Medical School and Hospital from 1898 to 1908 and for many years clinical professor of medicine at the University and Bellevue Hospital Medical College; served on the staff of the Mount Sinai Hospital; formerly consulting physician to Hospital for Joint Diseases, and Hebrew Orphan Asylum; editor of "Ewald's Diseases of the Stomach" in 1892 and 1896; died January 26, aged 78, of coronary thrombosis.

Hugh White Priddy, Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1915; member of the Tennessee State Medical Association; member and in 1939 vice president of the Southern Psychiatric Association; president of the Memphis Hospital Association in 1933; formerly assistant in medicine, neurology and psychiatry and instructor in neurology and psychiatry at his alma mater; served as a lieutenant during World War I; at one time part owner of the Leigh and Priddy Hospital, Charleston, Miss., and the Wallace Sanitarium; served on the staffs of the Memphis General and Baptist Memorial hospitals and the Home for Incurables; member of the Memphis Rotary Club; died January 17, aged 56, of myocardial insufficiency.

Charles Allen Riley Ⓢ Boston; Jefferson Medical College of Philadelphia, 1905; assistant in pulmonary diseases from 1910 to 1916, instructor, pulmonary diseases from 1916 to 1925, instructor, pulmonary diseases and climatology from 1925 to 1929 and instructor in medicine from 1932 to 1934 at Tufts College Medical School; captain in the medical corps of the U. S. Army during World War I; on the active staff of the health department of Boston and consultant for the health department of Newton; on the staffs of the Boston Dispensary and Boston Sanatorium; on the staff of the Brooks Hospital, Brookline; died January 30, aged 62, of coronary thrombosis.

Oliver S. Bacon, St. Louis; Missouri Medical College, St. Louis, 1889; died in Maplewood, Mo., January 19, aged 79, of chronic endocarditis.

Milton Reed Barker, Wilmette, Ill.; Chicago Homeopathic Medical College, 1890; Northwestern University Medical School, Chicago, 1901; for many years on the staff of St. Francis Hospital, Evanston; died February 3, aged 92, of coronary thrombosis and endocarditis.

John Henry Richard Barry, Forest Hills, N. Y.; College of Physicians and Surgeons, New York, 1890; member of the Medical Society of the State of New York; past president of the Queens-Nassau Medical Society; in 1938 retired after thirty years as assistant sanitary superintendent department of health for the borough of Queens; served on the staff of St. John's Long Island City Hospital, where he died March 10, aged 75, of angina pectoris.

Edgar Bates, Ogden, Utah; University of Michigan De-

partment of Medicine and Surgery, Ann Arbor, 1900; formerly associated with the Indian Service at Warm Springs, Ore.; died January 24, aged 74, of complications following a fall, and senility.

Galen Sibley Battey, Cawker City, Kan.; the Hahnemann Medical College and Hospital, Chicago, 1880; died January 21, aged 88, of cerebral hemorrhage.

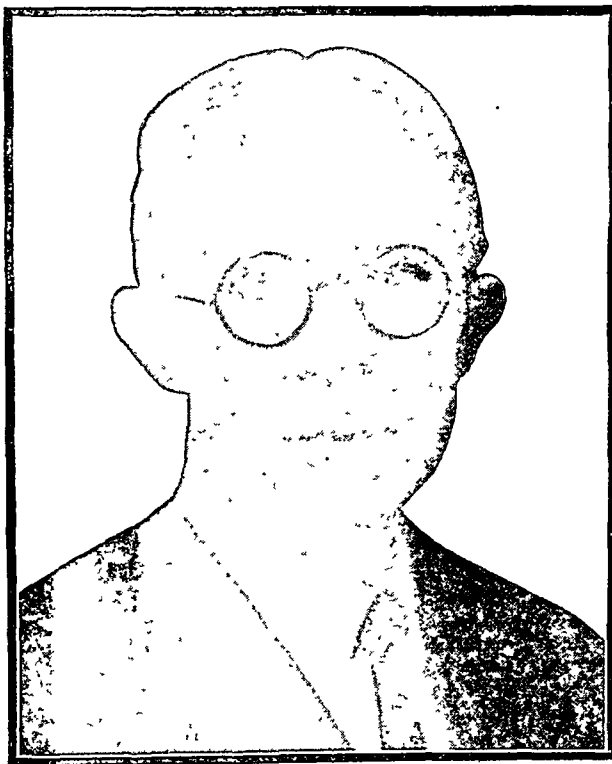
George Andrews Cooke, Boston; Long Island College Hospital, Brooklyn, 1891; school physician of Montague, Mass., for many years; cofounder of the Franklin County Public Hospital, Greenfield; died recently, aged 77, of heart disease.

Morris W. Cowden, Gerry, N. Y.; University of Buffalo School of Medicine, 1890; for more than fifty years health officer of the town of Gerry; died January 24, aged 82, of chronic myocarditis and arteriosclerosis.

Aloysius Francis Dowd, Boston; Tufts College Medical School, Boston, 1919; died recently, aged 48.

Walter L. Gaines, Wheeler, Texas (licensed in Texas under the Act of 1907); died in a hospital at Spur, January 6, aged 67.

Ernest H. Gibbs Ⓢ Pittsburgh; Detroit College of Medicine, 1910; died in the Presbyterian Hospital January 11, aged 55, of congestive heart disease.



ROBERT ANTHONY HATCHER, M.D., 1868-1944

J. A. M. A.
April 8, 1944

Albert Donne Gibson, Port Lavaca, Texas; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; member of the State Medical Association of Texas; served as city health officer and as acting assistant surgeon in the U. S. Public Health Service; died in the De Tar Memorial Hospital, Victoria, January 6, aged 69, of uremia.

Ernest Reed Hirst ♂ Camden, N. J.; Jefferson Medical College of Philadelphia, 1918; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; on the staffs of the Zuerhugg Memorial Hospital, Riverside, and the Cooper Hospital, where he died January 27, aged 51, of coronary thrombosis.

George Hofstetter ♂ Clinton, Iowa; Rush Medical College, Chicago, 1882; an Affiliate Fellow of the American Medical Association; on the staffs of the St. Joseph, Mercy and the Jane Lamb Memorial hospitals; died January 28, aged 86, of paralysis agitans.

Lydia Heckman Holmes, Pekin, Ill.; Loyola University School of Medicine, Chicago, 1917; member of the Illinois State Medical Society; past president and vice president of the Tazewell County Medical Society; at one time medical director and superintendent of the Fairview Sanatorium (McLean County Tuberculosis Sanatorium), Normal; on the staff of the Pekin Public Hospital, where she died January 22, aged 72, of diabetes mellitus.

John Robert Hood, Indianahoma, Okla.; Hospital College of Medicine, Louisville, Ky., 1897; died in Lawton January 18, aged 74, of vascular degeneration and renal disease.

Arthur Ernest Jessup, Diagonal, Iowa; State University of Iowa College of Medicine, Iowa City, 1895; member of the Iowa State Medical Society; died January 12, aged 74, of cardiorenal disease.

Horace G. Lamb, Santa Rosa, Calif.; California Medical College, San Francisco, 1901; died January 20, aged 83.

Richard Percy Landis, Vallejo, Calif.; University of Oregon Medical School, Portland, 1918; served during World War I; at one time owner of the Landis Clinic and Hospital, Grass Valley; died in the Vallejo General Hospital January 24, aged 54, of cerebral hemorrhage.

Clyde Raymond Larkins ♂ East Liverpool, Ohio; Jefferson Medical College of Philadelphia, 1903; president of the board of trustees and member of the staff, East Liverpool City Hospital; died January 29, aged 68, of heart disease.

Waldo Nathaniel Lemmon, Hereford, Texas; Barnes Medical College, St. Louis, 1899; member of the State Medical Association of Texas; also a minister; at one time a medical missionary in the Philippine Islands; past president of the Meade-Seward Counties (Kan.) Medical Society and the Randall-Deaf Smith-Parmer-Castro-Oldham Counties Medical Society; on the staff of the Deaf Smith County Hospital, where he died January 1, aged 71.

Andrew De Witt Mahaffay, San Juan, Texas; Hahnemann Medical College of the Kansas City University, Kansas City, Mo., 1902; member of the chamber of commerce; died January 12, aged 78, of injuries received in an automobile accident.

George Robert Mankis, Providence, R. I.; Hahnemann Medical College and Hospital of Philadelphia, 1932; on the staffs of the Homeopathic Hospital and St. Joseph's Hospital, where he died January 23, aged 37, of cerebral hemorrhage.

Thomas Gordon McCleary, Excelsior Springs, Mo.; Hahnemann Medical College and Hospital of Philadelphia, 1921; died January 9, aged 46, of brain tumor.

John E. Meany, Manitowoc, Wis.; Milwaukee Medical College, 1898; honorary life member of the State Medical Society of Wisconsin; past president and secretary of the Manitowoc County Medical Society; formerly city health officer; served on the staff of the Holy Family Hospital, where he died January 19, aged 81, of general carcinoma.

Albert J. Muckerheide, Milwaukee; Milwaukee Medical College, 1900; member of the State Medical Society of Wisconsin; died January 24, aged 69, of cerebral hemorrhage.

Ralph Edgar Niedringhaus ♂ St. Louis; St. Louis College of Physicians and Surgeons, 1898; served as a captain in the medical corps, U. S. Army, during World War I; at one time a member of the Illinois State Board of Health; died January 19, aged 66, of carcinoma of the cecum and cerebral arteriosclerosis.

Maud Parker, Seattle; Cornell University Medical College, New York, 1905; member of the Washington State Medical Association; served as a member of the board of trustees of the King County Medical Society and as secretary of the Medical Women's National Association; formerly on the staffs of the Seattle General and Swedish hospitals; died January 16, aged 66, of tuberculosis.

Walter Andrew Poche, Kaplan, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1902; died in Our Lady of the Lake Sanitarium, Baton Rouge, recently, aged 68, of coronary occlusion.

Leonard Holden Pote, Somerville, Mass.; Harvard Medical School, Boston, 1900; member of the Massachusetts Medical Society; died in Boston recently, aged 69, of carcinoma of the prostate.

James Frederick Roach, Centralia, Ill.; Missouri Medical College, St. Louis, 1896; served during World War I in France and later in Siberia; at one time affiliated with U. S. Veterans Bureau and the U. S. Public Health Service; died in West Palm Beach, Fla., January 26, aged 69, of diabetes mellitus and heart disease.

Maurice S. Schimmel ♂ Baltimore; Baltimore University School of Medicine, 1895; died in the Sinai Hospital January 12, aged 74, of bronchopneumonia and carcinoma of the liver.

Ivan W. Staples, Norway, Maine; Medical School of Maine, Portland, 1909; member of the Maine Medical Association; at one time examiner for the U. S. Pension Board; died recently, aged 60, of angina pectoris.

William D. Townley, Chamois, Mo.; Missouri Medical College, St. Louis, 1882; died in St. Mary's Hospital, Jefferson City, January 26, aged 84, of heart disease.

Isaac Johnson Townes ♂ Madisonville, Ky.; Jefferson Medical College of Philadelphia, 1889; vice president of the Hopkins County Medical Society; died in Mayfield January 22, aged 76, of coronary thrombosis.

Harwood Vernon, Verona, N. J.; University of Vermont College of Medicine, Burlington, 1895; died January 17, aged 75, of arteriosclerotic heart disease.

Redone Edgar Wasson, Fairview, Ill.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1906; member of the Illinois State Medical Society; director of the Fairview State Bank; died in the Graham Hospital, Canton, January 22, aged 78.

Harry J. Wertman ♂ Milford, Neb.; Rush Medical College, Chicago, 1903; for many years member and chairman of the board of education; served as a member of the fire department; died in Alhambra, Calif., January 26, aged 66, of cerebral hemorrhage and arteriosclerosis.

Leo Sheldon Wright, Lowry City, Mo.; University Medical College of Kansas City, Mo., 1899; died January 23, aged 66.

Hyman Yudin, Beverly, Mass.; College of Physicians and Surgeons, Boston, 1918; member of the Massachusetts Medical Society; died recently, aged 53.

KILLED IN ACTION

Ward Robert Vincent, Ventura, Calif.; Harvard Medical School, Boston, 1939; formerly a resident physician on the staff of the Ventura County Hospital; commissioned a lieutenant (jg), medical corps, U. S. Naval Reserve, March 7, 1942; later promoted to lieutenant; killed in the Pacific theater Nov. 20, 1943, aged 29.



LIEUT. WARD R. VINCENT (MC),
U.S.N.R., 1914-1943

Bureau of Investigation

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are abstracts of some fraud orders not dealt with previously.

"Dr." Clarence O R Rodney—For a mere 25 cent coin, this Chicagoan gave advice on how to remove a "junk," correct an unhappy marriage, conduct love affairs, have children, make money, or cure gambling or drinking habits. When the Post Office Department investigated Rodney's operations, it learned that he was a registered alien who came to this country from British Guiana in 1933, opened his small Chicago office in June 1940 and began doing business through the mails about a year later, advertising mostly in Negro newspapers. He referred to himself as "Doctor" and "psychologist," claiming to have received the degree of 'Doctor of Psychology (P.S.D.)' from 'The College of Divine Meta physics' at Indianapolis. The Post Office Department ordered him to show cause on Jan 21, 1943, at Washington, why a fraud order should not be issued against him. At the hearing Rodney was represented by a Chicago attorney. It was charged that Rodney was conducting a fraudulent mail order scheme, in that he represented himself as a bona fide physician, sold advice on personal problems relating to money, love, marriage, sickness and some other things, and furnished a horoscope of each remitter, that the "answers" which Rodney sent his customers were not applicable to their particular ailments or individual problems, but were merely mimeographed or carbon copies of vague and incoherent form letters used by Rodney, and that he sometimes asked for additional fees. It was shown further that Rodney offered "Scientific and Dynamic Help through the process of Telepathic and Clairvoyant Working Operations" to enable the customer to throw off "abnormalities" and also sent him a booklet entitled 'The Secret of Prosperity, Success and Happiness.' Rodney issued alleged psychologic "prescriptions" which, the government charged, contained some preposterous advice. Since no evidence was presented on behalf of Rodney in defense of the charges, and since he was found to be falsely representing himself as a physician and using the mails to swindle the ignorant, his business was debarred from the mails by a Post Office fraud order issued on April 23, 1943.

Lyncha A Johnson—This person did business from Memphis, Tenn., as "Dr. Lyncha A Johnson, Master Herbalist and Dr. of Naturopathy." His advertising referred to his business as a 'Botanic Drug Store and Herbal Health Home' where he had "Thousands of Nature's Wonderful Plants for Suffering Humanity." As a result of complaints sent by 5 of his victims, the Post Office Department investigated, and a hearing of the case was held in Washington on Jan 28, 1943, at which Johnson was present with his counsel. A microanalytically testified for the government that one Johnson nostrum, "Formula No 5x55," was essentially a mixture of podophyllin, belladonna, ginger, aloin and possibly cascara, and that another, "Compound Herb Tea No 4," contained coarsely ground herbs including equisetum plant, sassafras, buchu, uva ursi and strawberry leaves, cornsilk, marshmallow root and mallow flowers. Then there was "Compound Herb Tea Formula No 9099," which was reported to contain juniper berries, strawberry and sage leaves, gentian root, wild yam root, caraway seeds and stone root. Other Johnson nostrums, whose compositions were not given, were "Compound Herb Tea No 1" and "Dr. Lyncha A Johnson F and J Compound Herb Tea." A physician connected with the Food and Drug Administration testified that neither of these mixtures would be an effective treatment for any of the diseases for which they were sold. Accordingly, a fraud order was issued against Johnson March 12, 1943. It is also worth noting that in November 1940 in a federal court in Tennessee, Lyncha A Johnson pleaded guilty to violating the Food, Drug and Cosmetic Act in selling 5 of his nostrums under false and misleading representations for which he was fined \$1,500 and sentenced to be confined for 6 months in a jail or federal prison camp. These products were "Double Quick Liver Tablets," "Compound Herb Tea," "Blessed Herb Tea," "Herb Wash" and "St. Bernard Compound Herb Tea." Also this is presumably the person who once operated around Lake Village, Ark., under the names "Dr. L. A. J. Johnson," "Dr. George B. Williams" and "The Associated Doctors" and was twice prosecuted and fined in the courts in that vicinity for practicing medicine without a license. Around that time (1918) the Post Office Department issued its first fraud order against him for conducting a medical swindle through the mails, as reported in THE JOURNAL, August 17, 1918, page 590.

Unger-Vanderslice Vitaelixir—One Frank J Unger conducted a mail order scheme from Cleveland under the names Frank J Unger, Et Al, Chemists, "Unger Vanderslice, Chemists" and Unger Vanderslice Company, selling treatments known as "Vitaelixir Formulas" or "Course of Herb Formulas." He represented that this course when followed as directed, would, among other things, remove the cause of and cure arthritis, sciatica, rheumatism, lumbago, neuritis, neuralgia, heart trouble, high blood pressure and chronic gastric and intestinal disorders regardless of the age of the afflicted person or the duration or hopelessness of his condition, and that by its use diabetic persons using insulin could slowly wean themselves away from the insulin. Unger's literature described his "Normal Vitaelixir Course" as a series of "herb, root and mineral formulas," to be taken for a little over six months. The treatment consisted of "5 bottles of Alpha formula, 5 bottles of Tau formula and 2 bottles of Omega formula," the whole treatment selling for \$39, plus tax and mailing charges. Since Unger's various representations were obviously false, the Post Office Department summoned him to a hearing in Washington on a charge of fraud by mail. Two expert witnesses for the government testified that the Alpha formula contained emodin-bearing material, such as senna, cascara, jalap, podophyllin and ipecac, besides

sulfur, epsom salt, iron, phosphorus pentoxide, calcium, and traces of organic iodine, carbonate, sodium and kelp, plus some wintergreen and sassafras, that the sludge in the bottom of the bottle consisted of sulfate, magnesium, sulfur, sassafras bark, alfalfa, senna, jalap and cascara, and that the Tau and Omega formulas contained the same ingredients as the Alpha formula, though in slightly different amounts. An expert medical witness testified for the government that the action of these preparations ranged from laxative to purgative, that the proper treatment of arthritis would depend on the particular type of the disease and the cause thereof, the physical condition of the victim, and the possible existence of complications, that Unger's nostrums would not enable persons crippled with arthritis or rheumatism to regain complete use of their limbs and get completely well, as claimed by Unger, or have any beneficial effect whatever on the course of progress of an arthritic patient's disease or symptoms, and further, that the treatments and accompanying diet "would be adverse in all severe cases of diabetes." Unger testified that when suffering from arthritis himself and taking treatment in a hospital, he had concluded that "medical science knew nothing about arthritis," and, after leaving the institution, he had applied his "knowledge of chemistry to blood and food and experimented upon himself with various foods and diets," from which he determined "that the primary foundation of my sickness was food." However, since the medical testimony in the case showed distinctly that there was no scientific basis for Unger's claims to having a cure for the various conditions named, a fraud order was issued on April 23, 1943, debarring him from further use of the mails under the various names and titles that he had used.

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products:

Hairtone Preparations—These include "Quinine Hairtone," "Quinine Hair Marvel," "Hairtone Scalp Formula" and "Hairtone Hair Straightener" and are put out by Matilda Richman, trading as the Hairtone Company and Hairtone Laboratories, Brooklyn, who in April 1943 stipulated with the Federal Trade Commission to discontinue the following advertising misrepresentations. That any of her products will promote the growth of hair or be an effective treatment for falling hair, that they would constitute an effective treatment or competent remedy for dandruff or are indicated for itching or sore scalp, or will result in a healthy condition of the scalp, or that they are new discoveries or vegetable compounds or herbal formulas. Further, she agreed to cease using the word "Hairtone" as a designation for her products, or representing that they impart tone to the hair or are powerful stimulants, she also was to desist from using the word "Straightener" in the name of any of her preparations, or from representing that they will straighten the hair, or using the word "Laboratories" in her trade name or in any manner which may tend to represent that she operates a laboratory. In May 1942 the Post Office Department issued a fraud order against the names Hairtone Company and Marvel Company and their officers and agents, debarring them from the use of the mails.

Krank's Hair Oil—In April 1943 the Consolidated Royal Chemical Corporation, Chicago, and Benson & Dall, Inc., which handles its advertising, stipulated with the Federal Trade Commission that they would discontinue the following misrepresentations in the advertising of this product. That it is a cure or remedy for dandruff or valuable in the treatment of this condition in excess of the removal of dandruff scales, that it will stop falling hair or early baldness, promote the development of a good head of hair, or offer any benefit in treating irritation of the scalp in excess of affording relief from minor irritation due to the presence of dandruff scales.

Me Ba—That this product will relieve or cure gas pains, indigestion, heartburn or ulcers, or reach the cause of stomach disorders, were misrepresentations which the Buenger Pharmaceutical Company of Denver agreed to discontinue in its advertising, in a stipulation that it entered into with the Federal Trade Commission in April 1943. In this the concern further agreed to reveal that Me Ba should not be used when abdominal pains or other symptoms of appendicitis are present, provided however, that such advertisement need only contain the statement, "Caution: Use only as directed" if the directions in the labeling should contain a warning to the same effect.

Thomas Lecithin Capsules with Vitamin D—Thomas C. James J and Rosie Martindale, doing business as Thomas Martindale and Company, Philadelphia, entered into a stipulation with the Federal Trade Commission in April 1943, agreeing to cease representing that this product is of value in treating nervous exhaustion, nervous headache, nervous irritability, or the various symptoms of nervousness such as irritability or loss of temper, that it will increase "nerve energy" or is a "brain food" or that when used as directed it will furnish the average minimum daily requirement of phosphorus.

Correspondence

SICKNESS, NOT HEALTH, INSURANCE

To the Editor:—The caption *Sickness, Not Health, Insurance* drew my attention to Dr. Haven Emerson's communication in *THE JOURNAL*, Nov. 27, 1943. Dr. Emerson believes that "it will add strength to our position and argument if we stick to the honest and correct term sickness insurance . . . , meaning insurance to meet the cost of sickness (institutional or medical)," avoiding wherever possible in the field of social insurance the term health insurance, which he associates with questionable political practices abroad and with the promotion of false hopes by "salesmen of New Dealism" and the "loose talk of health insurers" at home. He says further "In preparing to beat the Wagner-Murray-Dingell bill and similar legislation, we must tell the people that it compels them into sickness insurance and is in no honest respect a measure which will contribute to health promotion or protection."

Now one may note Dr. Emerson's dislike of the term health insurance without sharing it. One may agree with his definition of sickness insurance as it relates to the costs of illness without wishing to see the well established and more inclusive term displaced by the less. But when one reads the uncompromising clause I have put in italics, one may well call serious attention to a clearly drawn section of the Wagner bill which Dr. Emerson emphatically neglects.

This section is entitled "Grants-in-Aid for Medical Education, Research and Prevention of Disease and Disability." It directs and authorizes the Surgeon General of the Public Health Service "to administer grants-in-aid to non-profit institutions and agencies engaging in research or in undergraduate or post-graduate professional education. Such grants-in-aid shall be made with respect to each project (1) for which application has been received . . . and (2) for which the Surgeon General finds, with the advice of the council established under section 904, that the project shows promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation and related benefits provided under this act or to human knowledge with respect to the cause, prevention, mitigation or methods of diagnosis and treatment of disease and disability."

While it is clear that the term sickness insurance as defined by Dr. Emerson is not applicable to this part of the bill, it is equally clear that the term health insurance as used in the bill itself is in entire harmony with it. This would seem to be justification for its use by the Council on Medical Service and Public Relations, to which Dr. Emerson now takes exception.

In any case it is health we all desire, physicians and laymen. To us all it is the fundamental problem, however earnestly we try to spread the burdensome costs of sickness that, unprevented, strikes. And although we commonly think of prevention as the business of public health services, local and national, we all know that a hospital day saved is one day of health earned; that incipient illnesses are commonly aborted when seen under clinical conditions; that there is such a thing as clinical prevention. Private insurance companies find it profitable to capitalize this familiar fact.

Whatever the ultimate disposition of the Wagner-Murray-Dingell bill now before the Congress, its sponsors invite our serious consideration of it as an earnest attempt to contribute constructively toward the solution of our health problem not only by providing for the costs of medical emergencies as they occur but by reducing their incidence as well. In telling the people about it, would it not be well to minimize such misunderstandings as have already emerged by permitting the bill to speak, literally, for itself?

HARRY BEAL TORREY, M.D., Berkeley, Calif.

[The letter of Dr. Torrey was referred to Dr. Emerson, who replies:]

To the Editor:—The fact that the Murray-Wagner-Dingell bill, as now presented, includes financial subsidies to institutions of learning which offer professional and vocational training in the medical and accessory occupations hardly justifies its description as an instrument of public or personal health. Neither education in the medical sciences and arts nor research in the numerous contributing sciences has lagged in the United States of America, even without the suggested grants-in-aid from the federal treasury.

In fact, it may be soundly argued that a beginning of deterioration in higher medical education and in the productiveness of medical research will occur when the administration of federal funds through such a medical dictatorship as is proposed in the bill becomes a dominant factor of their support.

The bill does not offer insurance of the people's health, even if health were insurable.

The bill is a hodgepodge, perhaps intentionally so put together, to offer some kind of service or benefit to a wide variety of people who long to get something for nothing out of fabulous Uncle Sam.

There is included compulsory sickness insurance. Provision is made for supplementary institutions for diagnosis and treatment of disease. Universities and colleges are to be helped. Research is to be aided.

And yet there is not any evidence that the measures proposed will add materially to the progress or maintenance of medicine for the sick or for protection and promotion of public health, beyond what we have grown to trust and have observed with general and proper satisfaction for the past half century, without the new, burdensome, costly and necessarily arbitrary provisions of this bill.

It is of such stuff, of such confusion of thought, with lack of evidence, proof or logical reasoning that what the social promoters call "health insurance" is compounded. Health is a popular cloak to hide a profusion of injudicious and ill conceived ideas to the effect that by more medicine, free or for a pittance, health will be achieved. Nothing is less likely.

Dr. Torrey may well promote plans for voluntary sickness insurance and encourage the support of research within the great National Institute of Health, but when he urges compulsory insurance as a means of bettering national health he is just chasing a rainbow.

HAVEN EMERSON, M.D., New York.

VOLUNTARY NONPROFIT PREPAYMENT FOR HEALTH CARE

To the Editor:—The Special Article "Voluntary Nonprofit Prepayment For Health Care" in *THE JOURNAL*, February 26, rates comment only in regard to "what it didn't say."

This is to be expected in all material produced by those who persist in subordinating medical problems by placing them in the genus of economic or social questions. It is the habit of those who lack medical training and experience to confuse medical service (being seen), with medical care (proper treatment).

The defect and danger in the publication of this article is the fact that it masquerades as a good, when contrasted with proposed federal imposed medical care.

What should be emphasized, and deliberately is not, in this article is the fact that the word "voluntary" contributes no virtue toward medical care: experience everywhere proves that all systems tend to become compulsory.

All prepayment systems are insurance systems, and any insurance, medical or otherwise, which collects in cash and

pays its benefits in services is essentially bad. It adulterates the quality of the product desired by the purchaser and sold as genuine.

This is not theory; this is fact, learned by all insurance men in all kinds of insurance.

There is no substitute for "Collect in Cash—Pay in Cash." This is the rule required to protect the plane of medical practice as it is today and is supported by the entire profession.

Take hospital insurance for example, where still it is tolerated, through indirect compulsions. It is a success financially and as a social project, but the actual care of the concrete sick patient has dropped to that of a generation ago. Untrained, unknown, curious novices in the glamor of being in a profession have access to and are in contact with some dangerously sick people who are not indigent but are able to pay and do think they have paid for skilled care.

This is my daily experience in hospital work and can be corroborated by the honest testimony of every house or staff doctor or even the good nurse of twenty years ago. I wonder whether it is a medical success.

FRANK J. DORAN, M.D., Cleveland.

"YAWS, LEISHMANIASIS AND PINTA"

To the Editor:—In reply to the comments of Dr. H. D. Chambers (*THE JOURNAL*, March 4, p. 667) on my article on "Yaws, Cutaneous Leishmaniasis and Pinta" (*ibid.*, Oct. 23, 1943), I would say:

1. My statement that the macular eruption corresponding to that of syphilis is nearly always absent in yaws was based on my own observations as well as on the writings of many men with long experience in the study of yaws. In my article on "Syphilis and Yaws: Different Diseases" (Publication No. 6, American Association for the Advancement of Science) I stated that "most authors who record their experience with yaws either fail to mention the presence of a macular rash or state definitely that it does not occur in this disease." Schüffner in 1907 stated that he had seen this rash in 4 per cent of his cases, which is the equivalent of being nearly always absent.

2. In discussing the treatment of yaws, I said that "In the early stages the disease may be permanently cured by three successive injections of neoarsphenamine." A similar statement is made by no less an authority than Col. Richard P. Strong (Stitt, E. R.: *The Diagnosis, Prevention and Treatment of Tropical Diseases*, Philadelphia, Blakiston Company, 1942, p. 423). Speaking of neoarsphenamine, Strong said "Frequently one dose has effected a cure when given early in the disease, but in order to prevent relapses two or three doses are advisable." He further said "In the Philippines, using 0.10 gram of neoarsphenamine per kilo weight of patient with two treatments as the rule, but occasionally including a third one, clinical cures resulted in 94.3 per cent of cases." Strong also quoted the results of Morse, who treated 1,064 cases in Santa Domingo with arsphenamine. He revisited the country five years later and found that "after treatment with three injections a cure was likely to be permanent."

3. The fact that Dr. Chambers found no further loss of cartilaginous tissue following treatment of several active lesions of gangosa cannot be considered as a cure of that disease, whose synonym is mutilating rhinopharyngitis "and whose course, even when untreated, is marked by periods of comparative quiescence" (Sutton, R. L., and Sutton, R. L., Jr.: *Diseases of the Skin*, ed. 10, St. Louis, C. V. Mosby, p. 1277).

4. My statement that "there is eventually complete cross immunity between syphilis and yaws . . ." is not incompatible with the acquisition of syphilis by some patients previously infected with yaws. Such cases are, however, sufficiently rare

to call for publication whenever found (case of H. M. Hanschell, quoted by Dr. Chambers). The eventual development of complete cross immunity is well illustrated by the situation in the island of Guam, where no syphilis exists among the natives, practically all of whom have acquired yaws in childhood.

HOWARD FOX, M.D., New York.

BIOPSY OF THYROID IN THIO-CYANATE GOITER

To the Editor:—On page 568 of the February 26 issue of *THE JOURNAL* Dr. E. B. Potter of Seattle makes a statement about a previous publication of mine (*New England J. Med.* 227:594-602 [Oct. 15] 1942) to which I object on the ground that it is incorrect.

The statement in question relates to a biopsy of the thyroid in a case of thiocyanate goiter, and on it Dr. Potter makes the comment that "the microscopic report is inconclusive in this case." My statement actually was as follows (p. 597): "The biopsy showed a wildly hyperplastic thyroid." What there is "inconclusive" about this statement I am quite unable to perceive. If Dr. Potter had called it "incomplete" I would have made no protest, but to call it "inconclusive" strikes me as preposterous. Perhaps my use of the word "wildly" was revolting to a pathologist, but I cannot understand how there could have been any doubt about its meaning in the connection in which it was used.

As a matter of fact the statement that Dr. Potter cites was a preliminary one. In the *Annals of Internal Medicine* (19:829 [Dec.] 1943) Rawson, Hertz and Means publish a full account of this case and others with photomicrographs.

J. H. MEANS, M.D., Boston.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, April 1, page 1012.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part I-II*. Various centers, May 1-3. Baltimore, April 18-20, Boston, April 4-6. New York City, April 3-5. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various large cities, May 8. *Oral*. Chicago, June 9-10. Final date for filing application is April 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*. Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY. *Oral, Part II*. Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 2-5. Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written, Part I*. Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral*. New York City, June 1-4. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written*. Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Written*. Locally, Sept. 22. *Oral*. St. Louis, Nov. 8 or 9. Final date for filing application is July 8. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Venereal Diseases: Conviction of Infected Person Exposing Another by Sexual Intercourse to Venereal Disease.—An Oklahoma statute makes it a felony for any person after becoming infected with venereal disease and before being discharged and pronounced cured by a physician to marry or expose any other person to such disease by sexual intercourse. An information was filed against the petitioner charging that on a stated day she, being infected with a venereal disease, committed the crime of exposing a stated person to a venereal disease by having sexual intercourse with him. She plead guilty and was sentenced to the state penitentiary. Later a habeas corpus proceeding was instituted in the criminal court of appeals of Oklahoma, alleging that the information in question was fatally defective and was insufficient to confer jurisdiction on the trial court because it failed to negative the fact that she had been "discharged and pronounced cured by a reputable physician in writing," which, so it was alleged, the statute specifically makes an element of the offense.

In *Epps v. State*, 69 OKL. Cr. 460, 104 P. (2d) 262, said the criminal court of appeals of Oklahoma, this court sustained an information under the identical statute on which this information is based. The information in that case was similar in language to the information here in dispute. It was alleged in the information involved in the *Epps* case:

That the said M. T. Epps did then and there knowingly, wrongfully and unlawfully and feloniously, by the act of copulation, communicate to the said Ruth Epps, a venereal disease, to wit: syphilis, contrary to the form of the statutes in such cases made and provided and against the peace and dignity of the State.

Although the specific question now raised as to the necessity of the information's of negating the fact that the accused had not been cured was not considered in disposing of the *Epps* case, we did hold in affirming that judgment that there were no fundamental defects in the information or the proceedings before the trial court which would deprive the court of jurisdiction to sentence the accused. There are many decisions of this court wherein we have held that exceptions in a statute similar to the exception herein, which provides for a written release from a reputable physician, are a defense to be pleaded by the defendant. It is fundamental that it is not necessary in an information to allege any fact which it is not necessary for the state to prove to secure a conviction. Under the statute here involved, if we should hold that the state had the burden of proving that the accused had not been discharged and pronounced cured by a reputable physician in writing, it would create an almost insurmountable burden on the state. The state would not be in possession of the intelligence as to who had been administering treatment to the accused or whether she had even been given treatment for her venereal disease. The prosecution surely would not be required to bring all of the physicians in the community to court to inquire whether they had discharged the patient as cured. To this court it is apparent that this provision was inserted in the statute by the legislature as a matter of defense which may be interposed by an accused, and when such defense is made it then should be submitted to a jury for their determination as to whether the accused had been discharged as cured by a reputable physician in writing and had innocently exposed another person to a venereal disease under the honest belief that she was no longer infected. The state has the burden of proving beyond a reasonable doubt that the accused had become infected with a venereal disease and that subsequently thereto she had exposed another person to such disease by some of the means set forth in the statute.

The court accordingly held that the information filed against the petitioner in the trial court was sufficient to allege a violation of the act and that the commitment of the petitioner of a plea of guilty to that information was sufficient authority for her confinement in the penitentiary. A writ for habeas corpus was accordingly denied.—*Ex parte Brown*, 139 P. (2d) 196 (Okl., 1913).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, April 18 20 Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary
- American Association for Thoracic Surgery, Chicago, May 5 6 Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8 11 Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of Plastic Surgeons, Philadelphia, May 25 27 Dr. Frederick A. Figg, 102 Second Ave., S.W., Rochester, Minn., Secretary.
- American Association on Mental Deficiency, Philadelphia, May 11 15 Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American Neurological Association, New York, May 19 20 Dr. Henry Alcop Riley, 117 E. 72d St., New York 21, Secretary.
- American Ophthalmological Society, Hot Springs, Va., May 29 31 Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.
- American Psychiatric Association, Philadelphia, May 15 18 Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
- American Psychoanalytic Association, Philadelphia, May 13 15 Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8 Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
- Arizona State Medical Association, Phoenix, April 14 15 Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
- Arkansas Medical Society, Little Rock, April 17 18 Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 9 Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- California Medical Association, Los Angeles, May 7 8 Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Connecticut State Medical Society, Bridgeport, May 2 4 Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Florida Medical Association, St. Petersburg, April 13 14 Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia, Medical Association of, Savannah, May 9 12 Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Chicago, May 16 18 Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, April 20 21 Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
- Kansas Medical Society, Topeka, May 10 11 Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society, New Orleans, April 24 26 Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25 26 Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 23 24 Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.
- Minnesota State Medical Association, Rochester, April 13 15 Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
- Mississippi State Medical Association, Jackson, May 9 10 Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, April 23 25 Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis, Secretary.
- National Tuberculosis Association, Chicago, May 10 12 Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1 4 Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 16 Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25 27 Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8 11 Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, Pinehurst, May 13 Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Fargo, May 7 9 Dr. L. W. Larson, 221 5th Street, Bismarck, Secretary.
- Northern Tri State Medical Association, Toledo, Ohio, April 11 Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
- Ohio State Medical Association, Columbus, May 2 4 Dr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24 26 Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Rhode Island Medical Society, Providence, May 24 25 Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.
- Society of American Bacteriologists, New York, May 3 5 Dr. W. C. Frazer, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- South Carolina Medical Association, Columbia, April 11 12 Dr. Julian P. Price, 105 W. Cheves St., Florence, Secretary.
- South Dakota State Medical Association, Huron, May 21 23 Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.
- Tennessee State Medical Association, Nashville, April 11 13 Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Dallas, May 10 11 Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
- West Virginia Medical Association, Wheeling, May 15 16 Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

47:1-148 (Jan.) 1944

- *Harmful Influence of Pregnancy on Advanced Tuberculosis as Modified by Collapse Therapy. J. W. Cutler—p 1
- *Constitutional Type of Female Precocious Puberty, with Report of 9 Cases. E. Novak—p 20
- Adrenal and Ovarian Tumor Associated with Cushing's Syndrome (So Called Masculine Voblastoma, Luteoma, Hypernephroma, Adrenal Cortical Carcinoma of Ovary). E. J. Kepler, M. B. Dockerty and J. T. Priestley—p 43
- Adrenal Rest Tumor of Ovary. H. J. Greene and W. A. Lapp—p 63.
- Intravenous Amino Acids in Nephrotic Toxemia of Pregnancy. J. E. Corr, W. Wagner and M. Hetzer—p 70
- Comparative Value of Endometrial Biopsies and Vaginal Smears. T. Neustaedter and L. L. Mackenzie—p 81
- Demerol (S140) and Scopolamine in Labor. W. R. Schumann—p 93.
- Continuous Caudal Anesthesia in 200 Obstetric Patients. H. Lyons and F. M. Hansen Jr—p 105.
- Findings in Routine Pelvic Examinations on 1,998 Women. E. L. Carey and Cornelia J. Gaskill—p 111.
- Combined Extrauterine and Intrauterine Pregnancy. W. C. Studdiford and G. Speck—p 118.
- Results of Surgical Castration in Women Under Forty. W. Tiller and N. Dreznier—p 122
- Treatment with Penicillin After Failure of Sulfu Drugs in Case of Vaginal Plastic Followed by Blood Stream Infection. A. M. Hellman and E. F. Guilfoil—p 125
- Abdominal Pregnancy Requiring Secondary Removal of Placenta. J. W. Pearson Jr and J. Parks—p 127.

Harmful Influence of Pregnancy on Advanced Tuberculosis.—Cutler reviews the immediate and late effects of pregnancy on advanced tuberculosis in 26 white women who were treated with collapse therapy to control the tuberculosis before giving birth to one or more children. These women have been under constant clinical and roentgenologic observation for various periods of time during the past fifteen years. The average for the group was nine years. These 26 women had forty-eight pregnancies following collapse therapy and gave birth to 40 children, of whom 36 are alive and well. Pregnancy can and does affect some patients with tuberculosis unfavorably. Exacerbation may occur either in the early months of pregnancy or within the first few months following delivery. Collapse therapy has minimized this risk. If the diseased area is well collapsed, the sputum free of bacilli and the collapse maintained throughout pregnancy there is little or no risk of reactivating the process. Such women may safely undertake one or more pregnancies. If there is disease in both lungs and only the "worse" lung is treated with localized collapse therapy, the disease in the uncollapsed lung, although quiescent before pregnancy, may become active in approximately 30 per cent of the cases. In about half of this number collapse therapy may actually be essential to control the reactivated disease in the untreated lung. The possibility of reactivating quiescent tuberculosis in an uncollapsed lung is not in itself a contraindication to pregnancy. Permission may be given as long as the patient is kept under observation and is willing to accept collapse therapy when it becomes necessary. Pneumothorax therapy may be considered as an alternative to therapeutic abortion in the presence of active tuberculosis first recognized during the early months of pregnancy. Only collapse therapy which produces adequate localized collapse of the diseased portion of the lung, such as pneumothorax, maintenance oleothorax or thoracoplasty, will prevent reactivation of the disease. Indirect collapse, such as phrenic nerve interruption, is not enough. Inadequate collapse therapy may be considered the same as no collapse therapy as far as the effect of pregnancy on tuberculosis is concerned. The majority of such patients with advanced disease do poorly, and pregnancy is inadvisable.

Constitutional Type of Female Precocious Puberty.—Novak reports 9 instances of precocious puberty in girls aged 15 months, 2 years, 2 years 8 months, 4 years, 4½ years, 6½ years, 7 years, 7 years and 7½ years. As to why an otherwise normal puberal mechanism is awakened at an abnormally early age no explanation seems plausible except on a chromosomal or genic basis, so that the designation of "constitutional" seems appropriate for this group. Cases of this type are far more common than those due to granulosa cell tumors, which gynecologists especially are apt to think of first in association with precocious puberty, often resorting to exploratory laparotomy in such cases. Biopsies in several instances has convinced the author that, unlike girls with granulosa cell tumor, those of constitutional type may not only menstruate but also ovulate at abnormally early ages. This would explain the occurrence of pregnancy at extremely early ages, as in the remarkable case reported from Lima, Peru, in 1940 of a full term pregnancy in a child 5 years and 8 months old. The most important practical points in the management of these cases are the physiologic management to avoid the development in the child's mind of self consciousness or a sense of inferiority or abnormality and protection against the possibility of insemination.

American Review of Soviet Medicine, New York

1:101-192 (Dec.) 1943

- Antitreticular Cytotoxic Serum as Means of Pathogenetic Therapy. A. A. Bogomolets—p 101.
- Method of Preparing and Preserving Antitreticular Cytotoxic Serum. P. D. Marchuk—p 113.
- Antitreticular Cytotoxic Serotherapy of Frostbite and War Wounds. B. E. Linberg—p 124.
- Digestion and Metabolism in High Altitude Flights. V. V. Streltsov—p 130.
- Altitude Sickness in Fliers. P. F. Vokhmianin—p 140.
- Wound Phthisis. A. V. Rusakov—p 145.

Annals of Internal Medicine, Lancaster, Pa.

20:1-192 (Jan.) 1944

- Vitamin Status of Population of West Coast of Newfoundland, with Emphasis on Vitamin C. Ellen McDevitt, Margaret A. Dove, R. T. Dove and I. S. Wright—p 1
- *Meningococcal Infections. Report of 43 Cases of Meningococcal Meningitis and 2 Cases of Meningococemia. H. W. Smith, L. Thomas, J. H. Dingle and M. Finland—p 12.
- *Some Clinical Aspects of Meningococcal Infection. F. D. Adams—p 33.
- *Analysis of Epidemic of Dengue Fever. P. Kisner and E. T. Lisansky—p 41.
- Further Studies of Platelet Reducing Substances in Splenic Extracts. E. P. Cronkite—p 52
- Osteoneuropathy: Clinical Consideration of "Renal Rickets". C. Rule and A. Grollman—p 63.
- Carcinoma and Leukemia. Report of 2 Cases with Combined Lesions: Review of Literature. M. Morrison, F. Feldman and A. A. Samwick—p 75.
- Renal Lesion in Rheumatic Fever. R. L. Hutton and C. R. Brown—p 85.
- Ultimate Effect of Pregnancy on Rheumatic Heart Disease. N. H. Boyer and A. S. Nadas—p 99.
- Studies in Acute Myocardial Infarction. I. Clinical Picture and Diagnosis. S. Baer and H. Frankel—p 108.
- Studies in Acute Myocardial Infarction. II. Laboratory Procedures and Diagnostic Aids. S. Baer and H. Frankel—p 115.
- *Treatment of Hypertension: Comparison of Mortality in Medically and Surgically Treated Cases. N. Flaxman—p 120.

Meningococcal Infections.—Smith and his collaborators review 51 meningococcal infections among patients admitted to the Boston City Hospital in the two year period beginning Sept. 1, 1940. Included among these were 43 with meningitis and 8 with meningococemia without clinical evidence of meningitis. There were 9 deaths among the former and none among the latter. Any one or more of the characteristic findings of meningococcal meningitis may be absent in any given patient. A tentative diagnosis of meningococcal meningitis can be made in almost every instance by examination of a gram stained smear of the cerebrospinal fluid or its sediment. Group II meningococcus should be carefully distinguished from the gonococcus, especially when the organism is recovered only from the blood. All except 2 of the patients with meningitis who recovered showed objective signs of clinical improvement twenty-four hours or less after chemotherapy. The initial dose of a sulfonamide should be administered intravenously even if patients appear only moderately ill when first seen. Patients with a

relative bradycardia, even though they appear only moderately ill on admission, should be observed closely for evidence of increased intracranial pressure. Lumbar puncture still has a place in the therapy of meningococcic meningitis for diagnosis and for the relief of symptoms of increased intracranial pressure. Normal cerebrospinal fluid sugar values obtained after the use of sulfonamides or of parenteral dextrose therapy are of no value by themselves in estimating the progress of the disease. Pulmonary involvement is quite frequent in the course of meningococcic meningitis. It probably represents a local infection by the meningococcus either alone or with other organisms. Pneumonia due to the meningococcus may occur in the absence of meningitis, but such cases were not recognized in the present series.

Clinical Aspects of Meningococcic Infection.—Adams states that as the result of experience gained in army hospitals his conception of meningococcic infection has been appreciably altered. Meningococcic disease should be regarded as a blood stream infection of which cerebrospinal meningitis is but one manifestation. Cases without meningitis are common. When the disease exists in a community every person with upper respiratory symptoms should be regarded with suspicion and closely watched. The usual forms in which meningococcic disease may appear are: (a) Meningococcemia with acute meningitis. Diagnosis can and should be made before the appearance of signs of meningitis. Especially in the presence of upper respiratory symptoms, severe headache, apathy, restlessness or delirium, muscle aches, slight stiffness of the neck or an eruption which is not characteristic of the common exanthemas are indications for diagnostic lumbar puncture. (b) Acute fulminating septicemia with or without meningitis, manifested by sudden onset with prostration, rapidly developing profuse macular and petechial eruption, early and rapid circulatory collapse followed by death, often within a matter of hours. (c) A less severe form of bacteremia characterized by inflammation of one or more joints, a less intense eruption, often macular rather than petechial, and aching in the muscles of the extremities. (d) A chronic form of bacteremia in which bouts of fever accompanied by joint pains and mild eruption occur at intervals of weeks or months with intervening periods of relatively good health. In any of these last three groups the clinical picture of meningitis may develop, but the diagnosis can and must be made in the absence of symptoms of meningeal involvement. Early treatment with a sulfonamide drug is almost certain to effect a cure except in cases of acute fulminating septicemia and in meningitic cases in which treatment is started late. The first dose should be given intravenously. Fluid intake must be high. Antimeningococcus antitoxin should be tried on all severely ill patients. Adrenal cortex extract may counteract the circulatory collapse associated with the fulminating septicemia.

Epidemic of Dengue Fever.—Kisner and Lisansky state that approximately 1,200 cases of dengue fever occurred in army personnel in and around a coastal town on an island in the South Pacific from March 1, 1943 to April 30, 1943. Six hundred and twenty-two were hospitalized and 318 cases of this group were analyzed as to symptoms, physical aspects and laboratory data. The island harbored numerous endemic cases of dengue fever among the civilian population, a large number of newly arrived nonimmune army personnel and the most efficient mosquito vector, *Aedes aegypti*. Cases which occurred early in the epidemic were more atypical than the subsequent ones and caused some difficulty in diagnosis. The onset was sudden in about 93 per cent after an incubation period of six to ten days. Aches and pains in one or more sites occurred in 99 per cent. The frontal headache, backache and generalized aches and pains were common complaints. Feverishness and chilliness were frequent and early symptoms. Weakness, abdominal pain and insomnia occurred next in order of frequency. Dizziness, nausea, burning of the eyes, photophobia and distortion of taste were complained of in a small number of cases. Diarrhea, itching of the skin, sore throat, vomiting, constipation, numbness and tingling of the extremities and epistaxis were last in order of frequency. The temperature curve was saddle-back in about 66 per cent of cases. A relative bradycardia was found after the second day of illness in

97 per cent. A rash was present in 37 per cent of all cases. A diffuse flushing of the skin, primarily of the face and chest, was seen in about one fourth. About the same number showed reddening of the conjunctiva. Adenopathy, pharyngeal vascular congestion, hyperesthesia or cyanosis of the fingers and toes were found in a small number. Laboratory examination revealed leukopenia and a Schilling shift to the left. Abnormal lymphocytes with a vacuolated cytoplasm and coarse granular inclusions was a rather constant finding. The convalescence was moderately prolonged. All cases responded to symptomatic therapy and there were no complications.

Mortality in Hypertension.—Flaxman compared the mortality statistics of 350 hypertensive patients treated surgically by Peet and his co-workers with the mortality of 244 hypertensive patients observed by himself and treated only medically. He found little difference between the two groups. He concludes that it is doubtful whether so-called specific surgery alters the course and prognosis in cases of hypertension, including those with malignant hypertension.

Archives of Neurology and Psychiatry, Chicago

51:1-112 (Jan.) 1944

- Paralysis of Nerve Induced by Direct Pressure and by Tourniquet. D. Denny-Brown and C. Brenner.—p. 1.
- Atrophy of Basal Ganglia in Pick's Disease: Clinicopathologic Study. A. J. Akelaitis.—p. 27.
- Agensis of Corpus Callosum with Possible Porencephaly: Review of Literature and Report of Case. A. T. Bunts and J. S. Chaffee.—p. 35.
- Protective Barriers of Central Nervous System: Experimental Study with Trypan Red. R. B. Aird and L. Strait.—p. 54.
- Cerebellar Syndrome Following Heat Stroke. W. Freeman and Edith Dumoff.—p. 67.
- Cerebral Arteriovenous Oxygen Difference: II. Mental Deficiency. H. E. Himwich and J. F. Fazekas.—p. 73.
- Cerebral Cortex of Man with Senile Dementia Believed to Be 107 Years Old. W. Riese and I. S. Zfass.—p. 78.

Archives of Ophthalmology, Chicago

31:1-128 (Jan.) 1944

- Penetration of Penicillin into Eye. L. von Sallmann and K. Meyer, with technical assistance of Jeanette Di Grandi.—p. 1.
- Pathologic Changes in Lens Associated with Nontraumatic Iritis. B. Samuels.—p. 8.
- Socket After Enucleation and Artificial Eye. T. J. Dimitry.—p. 18.
- Effect of Local Anesthetics on Regeneration of Corneal Epithelium. T. Gundersen and S. D. Liebman.—p. 29.
- Binoocular Refraction with Cross Cylinder Technique. H. S. Sugar.—p. 34.
- Problem of Split Macula: Study of Visual Fields. J. N. Evans and F. Browder.—p. 43.
- *Penicillin and Sulfadiazine in Treatment of Experimental Intraocular Infections with *Staphylococcus aureus* and *Clostridium welchii*. L. von Sallmann.—p. 54.
- Keratitis Occurring with *Molluscum contagiosum*. O. S. Lee Jr.—p. 64.
- Tuberculous Scleritis: Report of Case. E. F. Krug, with assistance of F. A. Echlin.—p. 68.
- Pupillographic Studies: V. Periodic Sympathetic Spasm and Relaxation and Role of Sympathetic Nervous System in Pupillary Innervation. O. Lowenstein and A. S. Levine.—p. 74.
- Diabetic Retinopathy. I. H. Leopold.—p. 96.

Penicillin and Sulfadiazine in Intraocular Infections.—Von Sallmann injected various strains of *Staphylococcus aureus* into the anterior chamber of the eyes of chinchilla rabbits with simultaneous injury of the lens to produce a reliable standard lesion for chemotherapeutic experiments. Combined oral and topical use of sulfadiazine was beneficial in 21.7 per cent of the eyes with purulent endophthalmitis thus produced when the treatment was initiated six to seven hours after inoculation. Penicillin applied topically with the first treatment six to seven hours after inoculation controlled the infection definitely in 62.5 per cent and possibly in 75 per cent of the eyes. Intralenticular injections with *Clostridium welchii* caused destructive endophthalmitis. Neither sulfadiazine nor penicillin therapy begun six hours after the intralenticular injection of *Cl. welchii* had any effect on the resulting endophthalmitis.

Arkansas Medical Society Journal, Fort Smith

40:139-154 (Jan.) 1944

- Promotion of Friendships Among Physicians. L. H. McDaniel.—p. 139.

40:155-170 (Feb.) 1944

- Diagnosis and Treatment of Hyperthyroidism. M. M. Even.—p. 155.

Endocrinology, Springfield, Ill.**34:1-76 (Jan.) 1944. Partial Index**

- Study of Crop Sac Weight Method for Prolactin Assay. S. R. Hall.—p. 1.
- Fluorescent and Histochemical Reactions in Rat Thyroid Gland at Different States of Physiologic Activity. E. W. Dempsey.—p. 27.
- Differential Concentration of Hormones in Central and Peripheral Zones of Bovine Anterior Pituitary Gland. G. K. Smelser.—p. 39.
- Mode of Action of Thiouracil on Thyroid Gland of Rabbits. E. J. Baumann, Nannette Metzger and D. Marine.—p. 44.
- Quantitative Study of Effects of Estradiol Benzoate and Progesterone in Modifying Incidence of Binucleated Cells in Rabbit Liver. J. C. Allan.—p. 50.
- Homoioplastic Adrenal Grafts to Cerebral Cortex of Rat. C. M. Pomerat, C. G. Breckenridge and L. Gordon.—p. 60.
- Cretinism in Rats Induced by Thiouracil. A. M. Hughes.—p. 69.

Gastroenterology, Baltimore**1:1085-1174 (Dec.) 1943**

- *Duodenal Diverticula, with Special Reference to Their Symptomatology. H. A. Warren and E. S. Emery Jr.—p. 1085.
- *Lymphosarcoma of Intestines: 15 Cases; Characteristic Sigmoidoscopic Picture. A. Winkelstein and M. H. Levy.—p. 1093.
- *Pulmonary and Intestinal Changes in Strongyloidiasis. J. E. Berk, M. T. Woodruff and A. W. Frediani.—p. 1100.
- Tetrachlorethane Intoxication: Early Recognition of Liver Damage and Means of Prevention. R. Gurney.—p. 1112.
- Mixed Effects of Olive Oil in Clinical Doses on Gastric Function. F. L. Apperly.—p. 1127.
- Effect of Anemia on Gastric Emptying. L. O. Jacobson and W. L. Palmer.—p. 1133.

Symptomatology of Duodenal Diverticula.—Warren and Emery studied 103 cases of diverticulum of the duodenum found in the records of the Peter Bent Brigham Hospital from 1914 to 1941. The study did not reveal any typical symptomatology. The diverticula found in the first portion of the duodenum are usually of the false type and appear to be associated in most instances with duodenal ulceration. Those in the second portion are usually a true herniation of the mucosa through the muscular wall. A fair number of these show inclusions of pancreatic tissue. Four of the cases showed evidence of inflammation within the sac, and 1 a localized abscess. The finding of a diverticulum in the first portion of the duodenum usually means the presence of peptic ulceration. One is justified in treating such persons as if they had a duodenal ulcer. A sac which fails to empty satisfactorily will give symptoms. A sac which does not retain the barium is less likely to be a source of trouble than one which shows a retention. Smaller pockets are less likely to be of clinical importance than the larger ones.

Lymphosarcomas of Intestine.—According to Winkelstein and Levy, lymphosarcoma of the intestine is a rare disease of unknown causation. The small intestine is more often involved than the large intestine. Multiple intestinal lesions are not uncommon. Lymphosarcoma may occur at any age. The authors present a summary of 15 cases observed at the Mount Sinai Hospital from 1932 to 1942. Eleven of the patients were men. There were no children. Nine patients were between the ages of 29 and 41 and 6 patients were between 52 and 65. The lesion of 9 patients was resected, of whom 4 died immediately after the operation. All the patients who survived the operation were subjected to radiotherapy. Two of the 3 other patients being given surgical treatment underwent exploration only, and in the third the lesion was merely sidetracked. This patient survived four years. Of the 2 undergoing exploration 1 died immediately and the other was lost sight of. Of the 3 patients not surgically treated 1 survived eighteen months with radiotherapy; 1 lived for four and one-half years without treatment and then survived another eighteen months with radiotherapy; the third patient died without treatment in three months. The histologic differentiation into small cell lymphosarcoma and reticulum cell sarcoma is unimportant clinically. Abdominal pain, loss of weight, pallor and abdominal mass or masses are the chief symptoms. There is frequently a characteristic sigmoidoscopic picture which resembles the convoluted surface of the brain. Sooner or later intestinal lymphosarcoma becomes a systemic disease. It is invariably fatal. With surgical removal plus radiotherapy the duration of life is usually less than one year. Occasionally patients live several years.

Pulmonary and Intestinal Changes in Strongyloidiasis.—Berk and his associates call attention to the fact that, although strongyloidiasis is primarily a disease of the warm climates and ordinarily rarely encountered in the temperate zones, the migration of persons from the southern part of the United States to the industrial war centers of the North and East and the return home of men who have completed military service in tropical climates will probably bring about a wide dispersal of the disease. The authors describe the life cycle of *Strongyloides stercoralis* and the pathologic physiology and clinical aspects of strongyloidiasis. They encountered 2 cases of strongyloidiasis in the past year in both of which pulmonary symptoms had appeared prior to their coming under observation. They emphasize that sputum and stools should be examined for evidence of *Strongyloides stercoralis* in any case with respiratory symptoms of obscure etiology, especially if there is an eosinophilia and x-ray evidence of transient pulmonary infiltrations. Pulmonary changes due to intestinal parasites should be suspected whenever dyspnea, cough or hemoptysis occurs in an individual who also complains of abdominal pain, diarrhea or other digestive tract difficulties. Granulomatous tumor-like masses may develop in those sections of the intestine heavily parasitized by *Strongyloides stercoralis*. Enteritis is a feature of strongyloidiasis, and abnormalities in the x-ray appearance of the small intestine may be found in patients with this disease.

Indiana State Medical Assn. Journal, Indianapolis**37:57-108 (Feb.) 1944**

- Sulfonamide Therapy in Brucellosis: Review of Literature. D. L. Urschel.—p. 57.
- Veneral Disease Epidemic in Rural Community. L. D. Eaton.—p. 60.
- Encephalopathy Following Massive Arsenotherapy. G. W. Bowman and F. G. Sheehan.—p. 66.
- Diagnosis of Acute Appendicitis. M. B. Welborn.—p. 68.
- Chronic Fatigue. G. E. Metcalfe.—p. 70.
- Neuroses Incident to War Strain—Their Effect on Civilian Population. L. D. Carter.—p. 72.

Journal of Allergy, St. Louis**15:1-76 (Jan.) 1944**

- Canine Sensitivity to Ascaris Antigen. M. Brunner, I. Altman and Katherine Bowman.—p. 2.
- Absorption of Whole Ragweed Pollen from Gastrointestinal Tract. R. Hecht, M. M. Mosko, J. Lubin, M. B. Sulzberger and R. L. Baer.—p. 9.
- Experimental Use of Ethylene Disulfonate (Allergosil Brand) in Prevention of Anaphylaxis in Guinea Pigs. R. T. Fisk, W. S. Small and A. G. Foord.—p. 14.
- Failure of Vitamin E in Treatment of Ragweed Pollinosis (Hay Fever). J. Glaser and H. Dam.—p. 18.
- Potential Pollinosis in Desert and Coastal City: Comparative Botanic Survey of Barstow and Santa Ana, California. R. W. Lamson, H. McMichael and M. Stickler.—p. 21.

Journal-Lancet, Minneapolis**64:1-34 (Jan.) 1944**

- *Hemorrhagic Disease of Newborn: Prevention and Treatment with Vitamin K. L. G. Pray.—p. 1.
- Continuous Caudal Anesthesia in Obstetrics. L. M. Randall.—p. 7.
- Laboratory of Physician and Small Hospital. W. A. Wright.—p. 12.
- Gastric Resection in Treatment of Gastrojejunocolic Fistula: Report of 3 Cases. H. M. Blegen Jr. and A. Ferret.—p. 17.
- Advances in Treatment of Hypertension. O. A. Sedlak.—p. 22.
- Comparative Study of Ultraviolet Irradiated Ergosterol (Steenbock Process) and Electrically Activated Ergosterol (Whittier Process): Preliminary Report. R. Garfield Snyder, W. H. Squires, J. W. Forster and E. Rudd.—p. 25.
- Student Health Rates, University of Michigan. W. E. Forsythe.—p. 27.

Vitamin K in Hemorrhagic Disease of the Newborn.—Pray reports the prophylactic effect on hemorrhagic diathesis in the newborn of antepartum administration of menadione to mothers. Some observations on treatment have also been made. The expectant mothers were divided into three categories. One group received menadione before delivery for periods varying from three days to six weeks; a second group was treated during labor; a third was given no medicinal vitamin K. A preparation of menadione in tablet form was used. The author utilized a simple test requiring only 0.1 cc. or less of capillary blood in making multiple determinations of prothrombin values in newborn infants. The results obtained confirm the observations of other investigators that the administration of vitamin K to expectant mothers, either during the latter part of pregnancy

or during labor, results in approximately normal prothrombin values in their infants and virtually eliminates the prolongation in prothrombin time, which usually occurs in untreated cases between the second and fourth days of life. Menadione is one of the most potent preparations having vitamin K activity. The incidence of retinal hemorrhages in the newborn was greatly reduced in infants of mothers treated with menadione during labor or prior to labor. The results suggest that the reduction is greatest in the cases in which treatment is instituted before the onset of labor. These findings are of particular interest in their possible relationship to intracranial hemorrhage. The introduction of formula feedings during the first few days of life counteracted hypoprothrombinemia. Three infants with hemorrhagic disease of the newborn were rapidly cured by administration of vitamin K. In 2 cases this was administered intramuscularly, and in 1 case by mouth. It is considered advisable to administer vitamin K to all mothers either during early labor or daily during the last few weeks of pregnancy. In case this is not possible, vitamin K should be given to the infant during the first twelve hours of life either by mouth or parenterally. If none of these courses are feasible, supplemental formula feedings given the baby during the first two or three days will raise the prothrombin level effectively. Treatment of hemorrhagic disease itself should consist in prompt administration of vitamin K, preferably by a parenteral route.

Journal of Nervous and Mental Disease, New York

99:1-114 (Jan.) 1944

- Neuropathologic and Psychopathologic Implications of Bilateral Prefrontal Lobotomy. G. W. Kisker.—p. 1.
Human Pyramidal Tract: VII. Critical Review of Its Origin. A. M. Lassek.—p. 22.
Constitutional Analysis: Case Study. F. A. Freyhan.—p. 29.
An Unusual Familial Syndrome. A. P. Friedman and J. E. Roy.—p. 42.
Traumatic Psychosis: Questionable Disease Entity. N. Moros.—p. 45.
Studies in Subconvulsive Electric Shock Therapy Effect of Varied Electrode Applications. B. H. Gottesfeld, S. M. Lesse and H. Herskovitz.—p. 56.
Homo-sexuality: Biologic Anomaly. E. G. Williams.—p. 65.
Note on First Demonstration of Intracranial Foreign Body by Roentgen Rays. C. Pilcher.—p. 71.

Journal of Neurophysiology, Springfield, Ill.

7:1-80 (Jan.) 1944

- Oscillographic Study of Olfactory System of Cats. C. A. Fox, W. A. McKinley and H. W. Magoun.—p. 1.
Effect of Calcium on Neuromuscular Junction. S. W. Kuffler.—p. 17.
Effects of Dorsal Root Section on Cholinesterase Concentration in Spinal Cord of Cats. D. Nachmansohn and E. C. Hoff.—p. 27.
Functional Organization of Frontal Pole in Monkey and Chimpanzee. Margaret A. Kennard and W. S. McCulloch.—p. 37.
Distribution of Acetylcholine in Brains of Rats of Different Ages. J. H. Welsh and Jane E. Hyde.—p. 41.
Functional Organization of Medial Aspect of Primate Cortex. P. Bailey, G. von Bonin, E. W. Davis, H. W. Garol, W. S. McCulloch, E. Roseman and A. Silveira.—p. 51.
Optic Nerve Regeneration with Return of Vision in Anurans. R. W. Sperry.—p. 57.
Peripheral Unit for Pain. G. H. Bishop.—p. 71.

Medical Annals of District of Columbia, Washington,

13:1-44 (Jan.) 1944

- Frontiers of Multiple Sclerosis: I. Pneumoencephalography, Electroencephalography, Morbid Anatomy and Pathogenesis. W. Freeman.—p. 1.
*Canicola Fever (Leptospirosis Canicola): Report of Human Case and Review of Literature. G. Tievsky and B. G. Schaefer.—p. 11.
Problems of Neuropsychiatry in United States Army. R. D. Halloran.—p. 17.
Hospital and Administrative Problems in Wartime Civilian Medical Practice. M. T. MacEachern.—p. 24.

Canicola Fever (Leptospirosis Canicola).—According to Tievsky and Schaefer, infection of man with *Leptospira canicola* is a rarely reported occurrence. The condition occurs much more frequently than has been recognized. A Negro aged 23 was hospitalized with high fever. One week before admission he cut his foot with glass. The various tests and examinations made included agglutination tests with *Leptospira icterohemorrhagiae* and *L. canicola*. The titer was 100 times as high with *L. canicola* as with *L. icterohemorrhagiae*. The authors point out that canicola fever is transmitted through the urine of infected dogs. It has been shown that leptospiruria in dogs differs from the comparable situation in rats in that the latter

continue to excrete leptospiras in the urine for the rest of their lives, while the former are shedders for only a limited period. The infection is perpetuated among dogs because of their habit of licking urine and intimate contact with genitalia. The disease in man results from the intimate contact with dogs in the stage of leptospiruria, the infection following the ingestion of contaminated material. There is probably a large canine reservoir in the United States with some potentiality for human infection. The authors stress the importance of doing agglutinations against both *L. icterohemorrhagiae* and *L. canicola* simultaneously because of the similar clinical picture resulting from infection with these organisms and the occurrence of a strong cross agglutination between them which may result in an erroneous diagnosis of Weil's disease.

Michigan State Medical Society Journal, Lansing

43:1-96 (Jan.) 1944

- Certain Observations on Pains in Head of Intranasal Origin. H. I. Lillie.—p. 27.
Treatment of Open Fractures. K. Speed.—p. 33.
Tularemia: Case Report. E. F. Ducey.—p. 38.
Prognosis: Some Considerations. A. J. Baker.—p. 39.

Missouri State Medical Assn. Journal, St. Louis

41:1-24 (Jan.) 1944

- Physiologic Problems of Burns. R. Elman.—p. 1.
Valvular Cholecystogastrostomy: Experimental Observations. J. M. McCaughan and H. K. Purcell.—p. 3.
Syphilis: Public Health Aspects. J. F. Bredeck.—p. 7.
Syphilis: Five Day and Other Treatments. A. W. Neilson.—p. 8.

41:25-48 (Feb.) 1944

- Sulfonamides: Mode of Elimination. H. L. Barnett.—p. 25.
Id.: Use in Venereal Disease. W. S. Sewell.—p. 27.
Id.: Use of Sulfonamides in Army. M. G. Flannery.—p. 28.
Use of Sulfonamides in Army. A. C. Van Ravenswaay.—p. 29.
Diagnostic Features of First Pain of Acute Appendicitis. E. L. Keyes.—p. 30.

New England Journal of Medicine, Boston

230:1-30 (Jan. 6) 1944

- Hodgkin's Disease: I. General Considerations. H. Jackson Jr. and F. Parker Jr.—p. 1.
Dental Needs of Massachusetts Children of Today. P. E. Boyle, W. R. Sisson, B. G. Bibby and Ruth L. White.—p. 9.
Phenarsine Hydrochloride in Treatment of Syphilis. W. P. Boardman and R. Kaldeck.—p. 12.
Differential Diagnosis of Chickenpox and Smallpox. C. Wesselhoft.—p. 15.

230:31-62 (Jan. 13) 1944

- How to Improve Treatment of Fractures. C. L. Scudder.—p. 31.
Diverticulitis of Colon: Review of Literature and Analysis of 91 Cases. E. L. Young and E. L. Young III.—p. 33.
*Transient Nervous Hypertension as Military Risk: Its Relation to Essential Hypertension. W. F. Rogers and R. S. Palmer.—p. 39.
Health Officer and Veterinarian. M. M. Kaplan.—p. 42.
Tuberculosis. J. D. Wassersug.—p. 45.

Transient Nervous Hypertension and Essential Hypertension.—Rogers and Palmer direct attention to transient elevations in blood pressure that are observed in men during physical examinations for the armed forces. During one month at the Office of Naval Officer Procurement, Boston, 222 (14 per cent) of 1,574 applicants had mild variable hypertension at the initial examination. The systolic pressure varied from 140 to 160 mm. and occasionally higher, and the diastolic pressure ranged from 95 to 110 and rarely as high as 120. About one third of the subjects have only systolic hypertension. Organic changes as judged by the history, physical examination and urine examination were absent. Transient nervous hypertension is evidence of a nervous pressor reaction and is often accompanied by one or more adrenergic manifestations, such as tachycardia, sweating, erection of hairs and disturbed rhythm. Persons with transient nervous hypertension have a somewhat more noticeable rise of the blood pressure in response to cold than do normal controls, but definitely less than do patients with definite but mild early hypertension. The familial predisposition to degenerative vascular disease of those with transient nervous hypertension appears less than in patients with definite essential hypertension. The prognosis of nervous hypertension as indicated by a long follow-up study of 25 cases regarding both mortality and morbidity before middle age is excellent.

Psychiatric Quarterly, Utica, N. Y.

18:1-176 (Jan.) 1944

- Sudden "Exhaustive" Death in Excited Patients N. R. Shulack.—p. 3.
*Use of Metrazol in Barbiturate Poisoning. S. Androp.—p. 13.
Prevention of Postconvulsive Asphyxia in Electric Shock Therapy. H. R. Haines.—p. 23.
Logorrhea. E. Bergler.—p. 26.
Rorschach Analysis of Psychotics Subjected to Neurosurgical Interruption of Thalimocortical Projections G. W. Kisker.—p. 43.
Autonomy in Anxiety. D. E. Cameron.—p. 53.
Study of Women Psychopathic Personalities Requiring Hospitalization. R. J. Van Amberg.—p. 61.
Fluctuations in Mental Level of Schizophrenic Patients A. I. Rabin.—p. 78.
Physiologic Concept of Hypoglycemia and Convulsive Therapy. M. Squires and S. J. Tillim.—p. 92.
"Spontaneous" Mental Cure. L. R. Wolberg.—p. 105.
Shock Therapy in Involutional and Manic Depressive Psychoses J. A. Bianchi and C. J. Chiarello.—p. 118.
Effects of Benzadrine Sulfate on Behavior of Psychopathic and Neurotic Juvenile Delinquents S. R. Korey.—p. 127.
Folie à Trois—Psychosis of Association S. R. Kesselsman.—p. 138.

Metrazol in Barbiturate Poisoning.—Androp reports the successful use and analeptic action of 36 cc. of metrazol in a case of poisoning with 102 grains (6.6 Gm.) of sodium amytal. The rationale for the use of metrazol is discussed and indications for its use are given.

Quarterly J. Studies on Alcohol, New Haven, Conn.

4:357-512 (Dec.) 1943

- Chemical Steps in Metabolism of Alcohol by Brain in Vitro J. G. Dewan.—p. 357.
Tunnel Vision. A. R. King.—p. 362.
Personality Study of Alcohol Addiction C. C. Hewitt.—p. 368.
Primitive Intoxicants E. M. Loeb.—p. 387.

Radiology, Syracuse, N. Y.

42:1-106 (Jan.) 1944

- Bone Changes in Leprosy: Clinical and Roentgenologic Study of 505 Cases G. H. Faget and A. Mayoral.—p. 1.
Absorptive Bone Changes in Leprosy. J. P. Cooney and E. H. Crosby.—p. 14.
Treatment of Retinoblastoma: Radiation Therapy Supplementing Surgical Treatment. G. M. Tice and E. J. Curran.—p. 20.
*Pitfalls to Be Avoided in Roentgen Diagnosis of Intracranial Disease. C. W. Schwartz.—p. 34.
Developmental Thinness of Parietal Bones J. D. Camp and L. A. Nash.—p. 42.
Roentgen Therapy of Pelvic Tuberculosis in Female. Harriet C. McIntosh.—p. 48.
Giant Cell Tumor of Lower Femur: Case Report with Roentgen and Pathologic Findings Before and After Curettage and Roentgen Therapy with Amputation for Sarcoma F. B. Mandeville and J. S. Howe.—p. 56.
Tissue Changes Produced in C3H Mice by 50 Roentgen Whole Body Exposure. A. Nettleship.—p. 64.
Determination of Position of Calcium Deposits and Foreign Bodies from Stereoscopic Films Without Use of Viewing Stereoscope. S. Levi.—p. 71.

Pitfalls in Roentgen Diagnosis of Intracranial Disease.

—After warning against drawing conclusions from inadequate films, Schwartz mentions among other factors the high incidence of a calcified pineal body and the estimation of its displacement. Another pitfall is the misinterpretation of an anomalous configuration and distribution of circulatory channels, particularly the diploic venous channels. The sutures are occasionally confusing. Convolutional impressions are often misinterpreted as evidence of intracranial pressure when in reality they are quite innocuous. Another frequent source of error in intracranial diagnosis is the misinterpretation of a demineralized sella turcica as evidence of pressure atrophy when actually it may be due to a congenital lack of bone calcium, to an abnormality of calcium metabolism of systemic origin or to a normally thin bone. This again emphasizes the importance of always considering the general physical status of the patient when interpreting roentgenographic changes. Symmetry of the skull is never perfect, so that we must be wary in interpreting asymmetry as abnormal. This is particularly true of the petrosa. From 10 to 15 per cent of skulls show congenitally asymmetrical petrous pyramids, one being aerated in a comparatively normal manner while the other contains very few air cells. The mistake must not be made of drawing conclusions from a study of only one part of the skull. Every structure must be carefully studied and evaluated with reference to the whole.

Surgery, St. Louis

15:1-210 (Jan.) 1944

- Symposium on Plastic Surgery.
Planning Reconstruction F. Smith.—p. 1.
Treatment of Battle Casualties and Street or Industrial Wounds of Face. V. P. Blair.—p. 16.
Early Treatment of Gunshot Wounds of Face and Jaws Case Histories of Patients Treated During World War I. V. H. Kazanjian.—p. 22.
Some Deformities of Face and Their Correction W. B. Davis.—p. 43.
Repair of Bony and Contour Deformities of Face R. H. Ivy.—p. 56.
Evaluation of Pedicle Flaps versus Skin Grafts in Reconstruction of Surface Defects and Scar Contractures of Chin, Cheeks and Neck. G. Aufrecht.—p. 75.
Vascular Prerequisites of Successful Skin Grafting New Method for Immediate Determination of Adequacy of Circulation in Ulcers, Skin Grafts and Flaps K. Lange.—p. 85.
*Fibrin Fixation of Skin Transplants R. T. Tidrick and E. D. Warner.—p. 90.
Treatment of Burns and Other Extensive Wounds with Special Emphasis on Transparent Jacket System Beverly Douglas.—p. 96.
Early Treatment of Burns A. W. Farmer.—p. 144.
Repair of Burned Hand. G. W. Pierce, E. H. Klabunde and D. Emerson.—p. 153.
Plastic Repair of Extensor Hand Contractures Following Healed Deep Second Degree Burns. P. W. Greeley.—p. 173.
Rehabilitation Following Severe Burns Experiences with Victims of Boston Night Club Fire B. Cannon.—p. 178.
Free Transplantation of Nipples and Areolae W. M. Adams.—p. 186.
Simplified Method of Rotating Skin and Mucous Membrane Flaps for Complete Reconstruction of Lower Lip. N. Owens.—p. 196.

Fibrin Fixation of Skin Transplants.—Tidrick and Warner employed fibrin fixation of skin transplants in 122 operations on 53 patients. There were three categories of wounds: (1) primary grafting procedures in which clean operative wounds have been grafted immediately, (2) burns and (3) other types of chronically infected granulating wounds. Fibrin fixation of tissue in operative procedures can be readily accomplished by the use of plasma and purified thrombin. Artificially supplied fibrin clots obtained in this manner proved to be of distinct mechanical aid in skin grafting operations. The results suggested that the fibrin also promotes healing, but additional data are needed for definite conclusions on this point. Thrombin in sterile and highly purified form is now available for clinical trial. The technic of fibrin fixation is simple and might be used to control the amount and site of deposition of fibrin in various types of operative procedures. Many possible applications suggest themselves. There have been no untoward results from the use of thrombin and plasma for fibrin fixation in the 122 operations in which the authors have used this technic.

Texas State Journal of Medicine, Fort Worth

39:461-508 (Jan.) 1944

- *Aortic Hypoplasia: Report of 3 Cases G. Werley, W. W. Waite and M. P. Kelsey.—p. 467.
Gastrointestinal Tract Malignancies P. Brindley.—p. 470.
Subacute Bacterial Endocarditis. Report of Case S. J. Lewis.—p. 472.
Incidence of Rheumatic Fever in Texas with Particular Reference to Dallas Area. Gladys J. Fashena.—p. 474.
Transplantation of Skin T. H. Thomason.—p. 476.
Rupture of Fourth and Fifth Lumbar Disks with Bilateral Sciatic Pain: Report of Case D. H. Echols.—p. 477.
Recent Developments in Hay Fever Therapy. E. E. Edmondson.—p. 479.

Aortic Hypoplasia.—Werley and his associates define aortic hypoplasia as that condition in which the lumen of the arterial vessels in the greater circulation remains abnormally small and the walls abnormally thin and elastic. In a series of 4,500 necropsies performed by the Department of Pathology of the University of Texas Medical Branch, aortic hypoplasia was recorded twenty-five times. Only 4 of the 25 cases showed cardiac enlargement. An extreme degree of aortic narrowness is probably required to produce heart disease, and it usually occurs only when there has been an excessive strain on the heart. Early heart failure may follow puberty, at which time the body in general grows more rapidly than the aorta. Increased elasticity at first somewhat compensates for aortic narrowness, but diminishing elasticity with age, even between 20 and 30 years, may explain the onset of failure among older patients. The rapid onset probably results from the limited reservoir of the small aorta causing dilatation of the already hypertrophied left ventricle. This may lead to a relative mitral insufficiency so that right heart failure appears early, as is seen in all 3 cases reported in this paper. The most important diagnostic method is fluoroscopy. The posteroanterior and left

anterior oblique views reveal best any changes in aortic size. If the aorta is small enough to cause heart failure a narrow aortic shadow and a small aortic arch and knob will be seen. The upper arch will be smaller than the pulmonary artery. There was no evidence of persistent thymus gland in the 3 patients seen by the authors. All had, in common, youth, vigorous exercise, brief duration, poor response to treatment and fatal outcome; necropsy revealed a small aorta, an enlarged and dilated heart with myocardial degeneration and fibrosis. Early recognition and discontinuance of strenuous exertion would no doubt greatly prolong life.

Urologic & Cutaneous Review, St. Louis

48:1-52 (Jan.) 1944

- *Carcinoma of Prostate Gland: Analysis of 88 Fatal Cases from Charity Hospital of Louisiana at New Orleans, with Special Note on Newer Methods of Therapy. P. J. Kahle and H. T. Beacham.—p. 1.
Outline for Office Investigation of Sterility. E. W. Page and C. W. Page.—p. 11.
Role of Madder in Gynecology. D. Lazarus.—p. 15.
New Concept of Gerontotherapy (Treatment of Aging Process). H. Benjamin.—p. 17.
Practical Treatment Management of Patient with Early Syphilis. H. Goodman.—p. 24.
Office Management of Syphilis of Long Standing. P. S. Carley.—p. 27.
Syphilis of Stomach. F. Cunha.—p. 32.
Perennial Problem of Syphilis with Special Reference to Its Neurologic Phase. M. H. Weinberg.—p. 39.
Epidermatomycosis of Feet and Hands. J. J. Barrock.—p. 43.

Carcinoma of Prostate Gland.—Kahle and Beacham studied 342 cases of carcinoma of the prostate treated at Charity Hospital of Louisiana over a four year period. A detailed study as made of the 88 cases (25.1 per cent) with a fatal outcome. Early diagnosis of prostatic carcinoma is difficult chiefly because the onset is insidious and the early clinical picture is obscure. Patients are seldom seen until their disease is far advanced. The causes of death of patients with carcinoma of the prostate are various and include, as well as the disease itself, chiefly urinary tract infection and degenerative diseases common to men of advancing years. Because of the status of many patients with carcinoma of the prostate gland, therapy usually must be directed chiefly toward the postponement of death and toward keeping the patient comfortable during the remainder of his life. Radical perineal prostatectomy is possible in only a minimal number of cases and is attended with a high mortality. Transurethral resection of the gland is the most practical operation for general purposes. The recent development of castration and of diethylstilbestrol therapy in the treatment of carcinoma of the prostate has permitted results not heretofore achieved with any other form of therapy. Neither method is curative, but both bring about in a large number of cases at least temporary improvement in the general status, relief from pain, regression of metastases and local regression of the malignant growth. The authors prefer diethylstilbestrol therapy for all patients to castration and regard it as more rational.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

52:1-40 (Jan.) 1944

- Carcinoma of Uterine Cervix: Treatment and Prognosis. D. G. Morton.—p. 1.
Women in Heavy War Work: Obstetrical and Gynecological Aspects. G. C. Schausfler.—p. 12.
Course of Postoperative Parotitis Under Radiation Therapy. F. Buschke and S. T. Cantril.—p. 21.
Incidence, Treatment and Prevention of Hydatid Mole and Chorion-epithelioma. Edna Myers Jeffreys and P. Graffagnino.—p. 29.
Oral Treatment of Ovarian Deficiency with Conjugated Estrogens-Equine. F. E. Harding.—p. 31.
Delusive Calm Following Jejunal Rupture by Nonpenetrating Abdominal Trauma. D. Metheny.—p. 34.

Yale Journal of Biology and Medicine, New Haven

16:217-266 (Jan.) 1944

- Humanism in Medicine and Psychiatry. G. Zilboorg.—p. 217.
Approach to Use of Drugs in Hypothermia. H. G. Barbour, Elizabeth A. McKay and W. P. Griffith.—p. 231.
Effects of Morphine on Cortical Electrical Activity of Rat. R. L. Cahen and A. Wikler.—p. 239.
Hereditary Malocclusion: Case Report. B. G. Anderson.—p. 245.
Moon Madness. H. S. Burr.—p. 249.
Influence of Morphine on Tissue Permeability and the Spreading Effect of Hyaluronidase. R. L. Cahen and M. Granier.—p. 257.
Colostomy of Ascending Colon or Cecum. G. J. Connor and S. C. Harvey.—p. 261.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

16:357-390 (Dec.) 1943

- Peptic Ulceration of Esophagus with Partial Thoracic Stomach. A. S. Johnstone.—p. 357.
Malignant Tumors of Upper Jaw. B. W. Windeyer.—p. 362.
Investigations into Degree of Scattered Radiation Received by X-Ray Workers During Routine Diagnostic Examinations in a Military Hospital Department. J. A. C. Fleming.—p. 367.
Two Congenital Deformities of Tibia: Congenital Angulation and Congenital Pseudarthrosis. E. R. Williams.—p. 371.
Efficiency of Radiation and Homogeneity. E. M. Ungar.—p. 376.
Role of Inflammation in Induction of Cancer by X-Rays. H. Burrows and J. R. Clarkson.—p. 381.
Adenolymphoma of Parotid Salivary Gland. M. Lederman.—p. 383.
Hodgkin's Disease of Stomach. H. Jungmann.—p. 386.
Note on X-Ray Isodose Curves. W. V. Mayneord.—p. 388.

British Journal of Venereal Diseases, London

19:139-184 (Dec.) 1943

- *Hyperthermia in Treatment of Resistant Gonococcal and Nonspecific Urethritis. A. J. King, D. I. Williams and C. S. Nicol.—p. 141.
*Physiologic and Biochemical Changes Following Hypertherm Treatment. J. Wallace and S. R. M. Bushby.—p. 155.
Nursing Aspect of Hyperthermy Treatment. Edith Pegg.—p. 166.
Venereal Disease in Pepsy's Diary. J. D. Rolleston.—p. 169.
Ophthalmia Neonatorum. E. Assinder.—p. 173.

Hyperthermia in Resistant Gonococcal and Nonspecific Urethritis.—King and his associates used hyperthermia with the Kettering apparatus in resistant gonococcal and nonspecific urethritis. They tabulate the results obtained in 418 cases with sessions of fever at 106 F. with and without premedication with various sulfonamides. They conclude that high fever mechanically produced is the treatment of choice for resistant gonococcal urethritis. It is much more effective when combined with sulfonamide premedication. The duration of fever required varied with the individual case, but sessions of six to eight hours produced a high proportion of successes. Cases in which hyperthermia was not followed by immediate cure frequently responded to measures which had previously failed. Hyperthermia was less effective but still of value in the treatment of resistant cases of nonspecific urethritis. The advantages of premedication with sulfonamides were less effective in these cases. The potential dangers of this treatment can be reduced to a minimum by careful and skilful technic.

Physiologic and Biochemical Changes Following Hypertherm Treatment.—Wallace and Bushby point out that treatment which involves the maintenance of the body temperature at 106 F. for a period of eight hours imposes a severe strain on the vital organs. They investigated physiologic and clinical changes in patients undergoing hyperthermia treatment for gonorrhea. Clinical studies were made on 254 cases in which hyperthermia treatment was being given at 106 F. for eight hours. Thirty-seven of these cases have been the subject of a detailed clinical, hematologic and biochemical investigation. The most constant and prominent features have been the development of anoxia and bilirubinemia, progressing to manifest clinical jaundice in 37 cases. Hippuric acid tests showed a considerable reduction in liver function. Continuous oxygen and carbon dioxide therapy lessened but did not abolish anoxia. Administration of oxygen and carbon dioxide appeared to prevent the development of circulatory collapse. Vomiting was less frequent after the introduction of oxygen therapy. This complication of circulatory collapse is a failure of the vasomotor and respiratory centers and is not due to a reduction in the circulating blood volume or to myocardial failure. Morphine is absolutely contraindicated. There is a transient polymorphonuclear leukocytosis and a transient hemodilution. There is a small transient rise in nonprotein nitrogen and a tendency for plasma chlorides and urinary chlorides to fall. Premedication with 6 Gm. of sulfathiazole does not increase the hazards of this treatment. Indications for prehypertherm and posthypertherm treatment are given.

British Medical Journal, London

1:1-32 (Jan. 1) 1944

- Nature of Concussion. G. Jefferson.—p. 1.
Nutritional Deficiency in Pathogenesis of Disease. J. Yudkin.—p. 5.
*Prisoner of War Mentality: Its Effect After Repatriation. P. H. Newman.—p. 8.
Case of Aspirin Poisoning. A. D. Charters.—p. 10.
Prostigmine in Treatment of Delayed Period. E. Friedmann.—p. 11.

Prisoner of War Mentality.—Newman states that the number of prisoners ultimately returning to Britain alone will be many hundreds of thousands and, that to countries throughout the world, millions. The return of these prisoners will entail a flooding of the country with men and some women who have experienced circumstances not necessarily harder but quite different from the majority of the others. The effects of internment are physical and mental. The treatment of the physical effects after release is probably a matter of good food, elementary medicine and pleasant conditions. In mental convalescence, common sense is the guiding principle. The use of individual psychologic treatment is debatable; it may carry with it a public acknowledgment of mental abnormality, which must at all costs be avoided. Barbed wire disease is a *misnomer*. It is wrongly called a disease and perhaps is better termed a mental attitude. This mental attitude is built up from four phases through which the average internee passes. Stage 1 is the breaking-in period, stage 2 the period of convalescence, stage 3 the lengthy period of boredom and stage 4 the repatriation period. The author lays emphasis on the importance of the typical mental reactions which follow release as opposed to those shown while in the camp. The great majority of returned prisoners of war do not give rise to concern, but those showing excessive mental reactions or an undue persistence of symptoms may need assistance.

Journal of Mental Science, London

89:363-482 (July-Oct.) 1943

- Psychometric Study of Senility. H. Halstead.—p. 363.
Results of Shock Therapy Evaluated by Estimating Chances of Patients Remaining in Hospital Without Such Treatment. L. S. Penrose and W. B. Marr.—p. 374.
Malaria in Neurosyphilis 1923-1943. J. E. Nicole.—p. 381.
Rehabilitation of Neurotic. L. Minski.—p. 390.
Language and Its Relation to Perceptual and Conceptual Thought. E. L. Hutton.—p. 395.
Observations on Toe Flexor (Schrijver-Bernhard) and Toe Fanning Reflexes in Catatonic Schizophrenics. H. H. Fleishhacker.—p. 403.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

50:393-464 (Dec.) 1943

- Review of Problem of Purpura During Pregnancy. C. W. F. Burnett and I. Klass.—p. 393.
Blood Examinations in Pregnancy. Lilli Meyer-Wedell.—p. 405.
Neonatal Mortality. F. M. B. Allen, C. H. G. Macafee and J. H. Biggart.—p. 417.
Erythroblastosis and Congenital Syphilis in Newborn Infant. J. L. Henderson and Agnes R. MacGregor.—p. 427.
Nomenclature of Hormone-Producing Tumors of Ovary. H. Burrows.—p. 430.
Spinal Anaesthesia in Cases of Delivery by Obstetric Forceps. Ellen B. Cowan.—p. 433.
Onyalai: Tropical Condition Characterized by Hemorrhages: Its Gynecologic Aspects. B. Gilbert.—p. 437.
Fibroma of Ovary with Ascites and Hydrothorax. A. Gild.—p. 440.
Soap as Foreign Body in Bladder. C. A. Mawson and G. A. Zak.—p. 443.
Advantages and Disadvantages of Trial Labor. W. Hunter.—p. 445.
Case of Anuria Following Manual Removal of Placenta and Blood Transfusion with Subsequent Development of Irregular Heart Action Cured by Potassium Administration. R. A. E. Magee.—p. 448.

Journal of Royal Army Medical Corps, London

81:205-254 (Nov.) 1943

- Experiences of an Administrative Medical Officer in Greece, 1941. D. T. M. Large.—p. 205.
Control of Malaria: East Africa Command, 1940-1943. D. B. Wilson and A. R. Melville.—p. 213.
Dyspepsia and Sick Parade: 141 Cases in an Armored Regiment. D. G. Aitken.—p. 223.
Compo-Cookery in Casualty Clearing Station. K. C. Pacey, J. R. Blackley and W. R. Martine.—p. 231.
Simplified Method of Applying the Thomas Splint as a First Aid Measure. F. A. Bevan.—p. 244.
Regimental Treatment of Scabies. H. F. Lunn.—p. 247.
Remedial Exercises for Backache. T. G. Rankine.—p. 250.

Lancet, London

1:1-38 (Jan. 1) 1944

- *Traumatic Arterial Spasm. S. M. Cohen.—p. 1.
Reactive Anxiety and Its Treatment. G. Garmany.—p. 7.
Controlled External Pressure and Edema Formation. R. J. Rossiter.—p. 9.
*Late Results of Perforated Peptic Ulcer. C. P. G. Wakeley.—p. 11.
Perforation of Gastric and Duodenal Ulcers: Series of 312 Cases. S. C. Raw.—p. 12.
Perforated Peptic Ulcer During Period of Heavy Air-Raids. C. C. Spicer, D. N. Stewart and D. M. De R. Winsor.—p. 14.
Continuous Intravenous Adrenalin in Spinal Anesthesia for Control of Blood Pressure. F. Evans.—p. 15.
Unusual Case of Pellagra. T. L. C. Henderson.—p. 17.
Kala-Azar in an English Seaman. R. B. Thompson.—p. 17.

Traumatic Arterial Spasm.—In his Hunterian lecture Cohen presents a survey of arterial spasm based on 120 collected and personal arterial incidents in most of which spasm was a feature and an experience with air raid casualties running into four figures. The peculiar responses depend on the natural contractile properties of the smooth muscle of the arterial wall. The sympathetic system is not concerned in the local spasm of the main artery, but by keeping the cutaneous circulation closed the sympathetic system prevents the blood pooling in the relatively unimportant skin areas and so starving the muscles. Thus where the sympathetic fibers are destroyed, as in associated nerve injuries, the onset of a Volkmann lesion may be favored. The muscle circulation cannot be assessed from observation of the skin circulation. The operation of arteriectomy has no reflex effect in cases of arterial spasm; it may be of value, but purely for mechanical reasons, such as removal of a clot or of a contused segment of the vessel in which a clot is likely to form. A local arterial bruise does not by itself act as an irritant focus and maintain spasm: this was initiated by the original blow. Pulling on the distal half of a vessel during ligation or embolectomy may initiate a spasm lasting varying times. Venous trauma is unlikely to cause reflex arterial spasm. Hemorrhage from a divided vessel is checked by the spasm induced by the stimulus of the elastic recoil of the vessel. When this recoil is prevented, contraction is effective. Tourniquet spasm and the allied condition following crushing injury are of an entirely different type. They are a shock response for which nerve block and icing of the limb till the circulation is restored are advocated. In the arterial spasm following fracture early operation is needed. Repeated manipulations during the first forty-eight hours are to be avoided. Segmentary spasm is regarded as innocuous, but exploration is advisable because the state of the vessel cannot otherwise be determined. In the management of the anemic limb, elevation is important. The limb should be kept cool, not iced. Icing is reserved for the crushing injury. Spasm of the deep vessel is not induced by refrigeration of the limb. Attention to the patient's general condition is the primary consideration.

Late Results of Perforated Peptic Ulcer.—Wakeley states that since the bombing of Britain began there has been an increased incidence of perforated peptic ulcer in both sexes. This has been noticeable among civilians and the personnel of the fighting forces. The author investigated the late results of operation in naval personnel. A follow-up of 103 patients with perforated peptic ulcer operated on at a Royal Naval hospital between 1924 and 1934 showed that 44 per cent are still serving in the Royal Navy. The operative mortality was only 8 per cent, partly because the average interval between perforation and operation was only four hours and partly because the patients were relatively fit men of an average age of only 32 years. Hence the contrast with a control series of civilians in which the average age was 46, the average interval between perforation and operation ten hours and the mortality 20 per cent. The patient with a perforated peptic ulcer need not be invalidated from the service, nor need a history of perforation necessarily mean refusal by recruitment medical boards.

Medical Journal of Australia, Sydney

2:453-472 (Dec. 4) 1943

- Psychiatric Casualties in an Operational Zone in New Guinea. A. J. M. Sinclair.—p. 453.
Case of Hematemesis Treated by Indirect and Direct Blood Transfusion. J. A. McLean.—p. 461.

South African Medical Journal, Cape Town

17:343-358 (Nov. 27) 1943

- *Causalgia in War Wounds. A. C. Copley.—p. 343.
Allergic Dermatitis from Footwear. A. Robins.—p. 345.
Intercalary Dislocation of Patella. S. V. Humphries.—p. 347.

Causalgia in War Wounds.—Copley shows that causalgia is an intractable form of neuralgia, neither truly somatic nor exactly following the distribution of peripheral nerves. It is characterized by a peculiar burning type of pain. An affected limb is cool but pink, extremely sensitive to touch and minor irritations. Vascular instability is present. The pain is periodic in intensity and variable in distribution but may be of such severity as to demand morphine for relief. The primary cause is always nerve trauma, but the trauma may be trivial, transient or indirect, and it is a curious observation that a nerve which has been shaken or bruised more commonly sets up causalgia than one which has been completely divided. The author describes several case reports to illustrate this. Causalgia is clearly not a neuritis or inflammation of the normal channels of communication between receptor organs and the areas of appreciation in the brain. There is sufficient evidence to show that causalgia is a disease of the vasomotor nerve supply to the limbs either of the efferent or of the afferent fibers or of both. Causalgia is a peculiar reflex set up by the pain of trauma and bound up with the blood vessels. If it is accepted that causalgia is a fixed sympathetic reflex, it must be broken somewhere in its path. To produce lasting results in causalgia of the arm the stellate ganglia must be exposed and, in the leg, the lumbar ganglia.

Revista de Tuberculosis, Havana

7:403-500 (July-Sept.) 1943. Partial Index

- Nontuberculous Pulmonary Lesions. E. Rivero.—p. 444.
*Complications of Extrapleural Pneumothorax. R. N. Boza Mesa.—p. 452.

Complications of Extrapleural Pneumothorax.—Boza Mesa reports 5 cases of gas embolism and an instance of pleural epilepsy complicating artificial extrapleural pneumothorax. A necropsy in 1 of the cases in which death resulted from cerebral gas embolism in the course of the insufflation of air revealed greatly diffused air bubbles in the arterioles of the cerebral convolutions. In the instance of pleural epilepsy two different attacks occurred. The insufflation of gas was immediately discontinued. The author emphasizes the danger of these complications, which constitute definite contraindications for further extrapleural insufflations.

Beiträge zur klinischen Chirurgie, Berlin

174:177-336 (March 3) 1943

- Cysts of Lower End of Ureter. D. von Klimkó and A. Kálló.—p. 177.
Perforated Gastric and Duodenal Ulcers and Their Postoperative Complications. J. von Szelezky.—p. 189.
*Diabetes Insipidus Caused by Gunshot Injury of Head. W. Lambrecht.—p. 214.
Gas Gangrene of the Face. W. Lambrecht.—p. 218.
Histologic Diagnostic Evaluation of Large Number of Surgical Specimens of Stomach and Duodenum, with Particular Attention to Ulcer Carcinoma. W. Herzog.—p. 221.
Surgery of Esophageal Diverticulum. U. Graff.—p. 244.
*Causalgia After War Injuries. Wanke.—p. 263.
Diagnosis and Treatment of Subphrenic Abscess, Particularly Its Transperitoneal Opening. K. Kindler.—p. 293.
*Incidence of Cutaneous Relapses After Operation of Cancer of Breast, with Particular Consideration of Use of Electric Knife and of Postoperative Roentgen Irradiation. Helene Rieks.—p. 307.
Early Diagnosis of Gastric Cancer. M. Weiser.—p. 327.

Diabetes Insipidus After Gunshot Injury of Head.—Lambrecht reports a gunshot injury of the head sustained by a soldier. The man felt extreme thirst. Roentgenoscopy revealed fractures of the coronoid process of the lower jaw bone on both sides. The sella turcica appeared normal, and there was no fracture at the cranial base. There was hardness of hearing and a positive Romberg sign. There was some involvement of the facial nerve on the right side. The rest of the cerebral nerves showed no impairment of function, and there were no motor or sensory disturbances of the trunk and the extremities. The patient drank 25 liters of water daily, but the administration of phenobarbital and of hypophysin gradually reduced

the fluid intake to 4 liters in the course of four weeks. The author assumes that the missile in passing through caused considerable contusion of the adjoining parts of the brain, particularly the hypophysis and the diencephalon.

Causalgia After War Injuries.—Wanke defines causalgia as a pain syndrome with vasomotor and trophic sympathetic disturbances. The pain is elicited by tactile, thermic, sensory or psychic stimuli of subthreshold intensity. The patients have a morbid desire to lessen the pain by keeping the involved extremity moist. Some moisten all uncovered parts of the body. This condition originates in local injuries of the median, ulnar or sciatic nerves. Even injuries of the soft parts in the regions innervated by these nerves may cause causalgia. In one case of causalgia with partial injury of the sciatic nerve microscopic examination disclosed an inflammatory process in the perivascular lymph channels and in the lymph spaces of the intraneural vessels. Microscopic studies of 10 neuromas of the sciatic, median or ulnar nerves disclosed no such changes. This explains not only the pathophysiologic disturbances of causalgia but also its long duration and its refractoriness to treatment, because the inflammation ascends intraneurally to the spinal cord. Cyanosis usually exists in the diseased limb. A spasm of the arterioles exists with subsequent stasis in the capillary system and in the venules. The resulting interference with the metabolism and the gas exchange induces absorption of toxic products, and this in turn maintains the lymphogenic perivascular inflammation of the intraneural vessels. This represents a vicious circle which can be interrupted only by intervention on the sympathetic. Resection of the sympathetic trunk of the cervicodorsal thoracic chain for the upper extremity and of the lumbosacral chain for the lower extremity is immediately effective as regards the pain and the vasomotor and vegetative trophic disturbances. Follow-up examination five months after operation revealed 1 failure among the author's 6 cases. Although the immediate effect of resection of the sympathetic trunk is quite impressive, the complete denervation of the involved member is advisable in order to avoid relapses. Conservative measures, such as Leriche's anesthesia of the stellate ganglion, should be tried first. The reported microscopic changes indicate that in chronic cases even interventions on the sympathetic will fail.

Cutaneous Relapses After Operation for Cancer of Breast.—Rieks attempted to determine whether cutaneous recurrences of mammary cancer are less frequent after operations with the electric knife than after operation with the scalpel. Gerlach had demonstrated the superiority of the electric knife on the basis of cases treated at the clinic in Breslau between 1928 and 1933. Rieks reinvestigated Gerlach's cases as well as a number of additional cases treated up to 1939. She found that cutting with the high frequency instrument did not contribute to a noticeable reduction in the cutaneous relapses but that the improved roentgen irradiation improved the surgical results, so that the number of cutaneous recurrences was decreased by one third. She thinks that carefully planned postoperative roentgen irradiation will lead to even better results. Electric cutting had the effect that the relapse-free period was prolonged from an average of nine to an average of fifteen months.

Zentralblatt für Chirurgie, Leipzig

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- *Jejunal Ulcer and Gastrojejunocolic Fistula. H. von Haberer.—p. 1182.
Guiding Lines in Surgery of Bile Passages. G. Pototschnig.—p. 1190.
A Rare Postoperative Complication. R. Tölle.—p. 1202.
Permanent Cure of Primary Sarcoma of Stomach. I. Maack.—p. 1204.

Jejunal Ulcer and Gastrojejunocolic Fistula.—Gastrojejunocolic fistula is a grave complication of a jejunal peptic ulcer which requires a truly radical operation to overcome it. Von Haberer resects the stomach, including the pylorus and tissue beyond the gastrointestinal anastomosis if an operation for exclusion has preceded the condition, also the excluded part and the fistula bearing segment of the colon. He encountered 25 instances of gastrojejunocolic fistula after 241 radical operations for jejunal peptic ulcer. The incidence of jejunal peptic ulcer can be considerably reduced by avoiding gastroenterostomies, particularly the unnecessary ones, as well as all operations for exclusion.

Book Notices

Clinical Diagnosis by Laboratory Examinations. By John A. Kolmer, M.S., M.D., Dr.P.H., Professor of Medicine in the School of Medicine and the School of Dentistry of Temple University, Philadelphia. Cloth. Price, \$8. Pp. 1,239, with 75 illustrations. New York & London: D. Appleton-Century Company, Inc., 1943.

From the prolific pen of Dr. Kolmer comes another book which will receive a hearty welcome from physicians, students and clinical pathologists. It is devoted principally to the interpretation of the findings of the laboratory and their application to the scientific practice of medicine. In the last three decades the laboratory has assumed a most important role in the diagnosis and treatment of disease not only in the hospital but also in private practice. While the clinical pathologist is frequently called on in consultation to evaluate the laboratory findings, the responsibility finally rests on the clinician, who not only supervises the collection of the specimen but must also correlate the results of the laboratory with the clinical data at the bedside or office. In this volume he will find useful information to guide him.

The work is divided into three parts. The first comprises the clinical interpretations of practically all the tests used in the laboratory, even those of hormones, vitamins and the allergic reactions. Under each chapter heading is a discussion of the underlying physiology as well as its bearing on the treatment. A most valuable feature running throughout the entire volume is the tables summarizing the contents of each chapter in concise wording which should prove a boon to the busy practitioner.

The second part is devoted to the practical application of laboratory examinations in clinical diagnosis and ranges over a large number of diseases, such as those of the blood and the urinary system, the venereal diseases, those of the digestive and cardiovascular systems, diseases of the respiratory tract, those of metabolism, and infectious diseases. Included are also diseases of vitamin deficiency and the endocrine glands. Considerable attention is devoted to the interpretation of serologic tests, particularly those in syphilis, which at times have plagued the pathologists as well as the clinicians. Due consideration is given to false positives and so-called biologic falsely positive reactions. Transfusion hazards and the Rh factor are adequately discussed. The intradermal tests are beautifully illustrated by colored plates. As the mode of collection of the specimen is of primary importance, the cooperation of the clinician is continually emphasized.

The third part deals with the technical procedures of the laboratory tests and comprises 134 pages of short descriptions of various examinations. They are not intended to replace the larger manuals but are inserted here for the convenience of students in medical technology who prefer to have the technic and the interpretation in the same volume. Among the newer tests are those for crystals of sulfonamide compounds in the urine, and the determination of the various sulfonamides in the blood.

The index is quite thorough, the boldface type indicating the important sections. There are a few typographic errors, probably unavoidable in a volume of this size. A bibliography, intentionally limited, is appended to each chapter.

Pathological Histology. By Robertson F. Ogilvie, M.D., F.R.C.P., Lecturer in Pathology and Assistant in Forensic Medicine, University of Edinburgh. Foreword by A. Murray Drennan, M.D., F.R.C.P., Professor of Pathology, University of Edinburgh. Second edition. Cloth. Price, \$9. Pp. 411, with 235 photomicrographs in color. Baltimore: William Wood & Company, 1943.

The revised edition contains an increase of seventy-six pages and fifteen illustrations. The volume is unique in the content of so many color photomicrographs of histopathologic processes. Many improved pictures replace previous photographs and are presented in colors strikingly similar to the appearance under the microscope. Typical special staining reactions as well as pigment deposits and microchemical tests are well portrayed. The color reproductions, however, while excellent, lack the clear minute histologic detail that only black and white illustrations apparently can depict. The text portions are almost limited to short macroscopic and more detailed microscopic description of representative pathologic conditions that usually comprise the slides used in teaching students histopathology in the laboratory.

In this way the book is meant to supplement the average textbook of pathology for the medical student. The first four chapters discuss and illustrate general pathology, the next two tumors and the remaining twelve the special pathology of various systems. The newly added chapter of ten pages on the integumentary system describes two unusual skin conditions and may well have been omitted. The chapters on the histopathology of the kidney, heart, blood and hemopoietic system are particularly instructive. This work can serve as a guide for assistants in the laboratory course of histopathology as well as a reference book for students. It should emphasize the great value of the use of modern Kodachromes in demonstrating cellular changes to students and to practitioners in the clinicopathologic conference.

Medical Parasitology and Zoology. By Ralph Welty Nauss, B.Sc., M.D., Dr.P.H., Assistant Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York. Foreword by John C. Torrey, Ph.D. Cloth. Price, \$6. Pp. 534, with 95 illustrations. New York & London: Paul B. Hoeber, Inc., 1944.

As indicated in the foreword and preface, this volume is designed primarily to meet the needs of second year medical students for laboratory, lecture and collateral information in the field of medical parasitology and zoology. On the whole this goal has been achieved, although the material is not always coordinated, at times is internally inconsistent and abounds in minor technical errors.

The subject is divided into four main sections and in addition contains a group of appendixes, a glossary, a bibliography and a subject index. In each main section, i. e. Protozoa, Parasitic Worms, Arthropods and Disease Transmission, and Poisonous and Venomous Forms, the disease-producing organism is first presented and then successively the epidemiology, pathogenesis, symptomatology, diagnosis, treatment, prognosis and prophylaxis of the disease are considered. The best presentations in the opinion of the reviewer are malaria, trichinosis, hookworms and hookworm infection, and venomous snakes.

Appendixes I-IX contain useful information in making laboratory diagnosis and in preparing material for class use. The glossary is probably too lengthy and too inclusive. The bibliography is divided into two parts, although the reviewer has been unable to discover the reason for this division.

Inaccuracies or inconsistencies of thought or statement include the following: (1) "amebic dysentery" is "characterized by a bloody mucoid diarrhea" (p. 25); (2) chiniofon, anayoden and yatren are referred to as different chemotherapeutics (p. 42); (3) the dosage of these antiamebic drugs is given as "3 or 4 enteric-coated 4-grain (0.25 Gm.) pills or tablets daily," rather than t. i. d. (p. 42); (4) there is no mention of diodoquin, while special emphasis is placed on the value of emetine bismuth iodide; (5) the seatworm (*Enterobius vermicularis*) is referred to as resulting from soil pollution (p. 139); (6) *Echinococcus granulosus* and *Hymenolepis nana* are considered as "food-infesting worms" (pp. 201, 206), and (7) Brill's disease and murine typhus are regarded as synonymous (p. 316).

There are several peculiar spellings and combinations of the technical names of etiologic agents of disease, viz. *Taenias*, *saginata* and *solium*; *Wüchereria* for *Wuchereria* and *malaya* for *malayi*. The section of arthropods is especially subject to criticism because of the numerous technical and orthographic errors in technical names.

Some information is not up to date, especially in the treatment of kala-azar, oxyuriasis, strongyloidiasis, *Fasciolopsis buski* infection and in the present day distribution of yellow fever and *Aedes aegypti*, the yellow fever transmitter.

There are numerous line and halftone illustrations and one beautiful color plate on the malaria parasites. A few of these are original. Some of the borrowed ones are inaccurate and others suffer from too great reduction or from second hand reproduction.

There is unquestionably a large amount of valuable material in this book, but it should not be placed in the hands of the medical student without first giving him a series of mimeographed sheets indicating the more serious errors. The reviewer looks forward to a second edition in which greater editorial care is exercised. The volume is well printed and has a pleasing format, but considerable paper could have been saved with more careful planning.

Medical Clinics on Bone Diseases: A Text and Atlas. By I. Snapper, M.D. Cloth. Price, \$10.75. Pp. 225, with 30 plates. New York: Interscience Publishers, Inc., 1943.

This is a new English edition of the author's well known monograph on a selected group of degenerative bone diseases. It consists of chapters on Recklinghausen's disease, on hyperplasia of the parathyroid secondary to other diseases, on avitaminosis D including fetal, infantile, late rickets and osteomalacia, on Paget's disease of the bone, on the lipoid granulomatosis, on Gaucher's disease and on multiple myeloma. Earlier editions of the author's studies of degenerative bone diseases appeared in the Netherlands and in France in 1938. The chapter on hyperparathyroidism is introduced by the author with a clear and concise historical review. In this he demonstrates his ability to select the high points on the road of our advancing knowledge without being burdensome by overquotations. This same discernment is evident also in his introductory discussions on lipoid granulomatosis and other conditions, especially Paget's disease.

From the diagnostic point of view, one cannot fail to appreciate the section on differential diagnosis; this applies in particular to osteitis fibrosa, to Paget's disease, to myeloma and to carcinomatous metastases. Similar attention is given to the differentiation in osteoporosis and lipoid granulomatosis as well as to renal insufficiency and osteomalacia. There is ample documentation by minute and thorough case reports. The most attractive and instructive features of the book include the pathologic descriptions and the reproductions of histopathologic and x-ray photographs. Roentgenograms and photomicrographs are excellent. While the chapters on osteitis fibrosa, osteitis deformans and vitamin deficiency are the most important because of the frequency of occurrence, the author nonetheless has spent the same painstaking effort on the less extensive chapters on lipoid granulomatosis and xanthomatosis of the bone. All are given concise historical introductions, a clear presentation of the principal clinical symptoms and particularly thorough treatment of the pathologic features. For the pathologist as well as for the orthopedic surgeon, this book is of exquisite instructional value. An English edition of this work is most welcome.

Pathology and Therapy of Rheumatic Fever. By Leopold Lichtwitz, M.D. Foreword by William J. Maloney, M.D., LL.D., F.R.S., Consulting Neurologist to the City Hospital, New York City. Edited by Major William Chester, M.C. Cloth. Price, \$4.75. Pp. 211, with 69 illustrations. New York: Grune & Stratton, Incorporated, 1944.

This is an interesting and unorthodox presentation of the pathology and therapy of rheumatic fever. In thirteen chapters are presented clinical and pathologic observations of rheumatic fever, rheumatic and nonrheumatic arthritis and certain related conditions. The last chapter is devoted to a consideration of therapeutic procedures in these various conditions. There are many excellent illustrations, and a short reference list appears at the end of each chapter. In his charmingly written historical foreword Dr. William J. Maloney gives an excellent summary of the main thesis of the monograph: "In it, Professor Lichtwitz has marshaled his scientific and clinical resources convincingly to present rheumatism as a manifestation of allergy. The antigens, to which he attributes the disease, are all foreign proteins of one sort or another. Some are as exogenous as horse sera; others are products of the proteolysis that tissues undergo when spent or damaged; and others, again, are metabolites of invading micro-organisms." There is much in this little book to stimulate the student of rheumatic fever, and it is certain to find many interested readers.

A Manual of Medical Parasitology. By Clay G. Huff, Professor of Parasitology, University of Chicago. Cloth. Price, \$1.50. Pp. 88, with illustrations. Chicago: University of Chicago Press, 1943.

This is based on the required course in the Medical School of the University of Chicago. The author notes the current need for greater emphasis on this field in the curriculum of medical schools than has been accorded in the past. The war, the shrinkage in the time and distance relations with the rest of the world, the great expansion in travel and the resulting increase in the sources of parasitic infections all combine to increase the importance of this field. This textbook covers the commoner parasitic infections of man, the insect vectors of blood diseases and the microscopic, serologic and immunologic methods employed in their diagnosis. It deals with the pathology but not with the treatment of parasitic infections.

Manometric Methods as Applied to the Measurement of Cell Respiration and Other Processes. By Malcolm Dixon, Ph.D., Sc.D., F.R.S. With a foreword by Sir F. G. Hopkins, O.M., F.R.S. Second edition. Cloth. Price, \$1.75. Pp. 155, with 26 illustrations. New York: Macmillan Company; Cambridge: University Press, 1943.

Dr. Dixon in this edition has assembled expertly and with authority the pertinent literature on manometric methods in the form of a handbook. Since these techniques are now being widely used in biologic research and are being applied to an ever increasing variety of problems, this not too technical account is a distinct service not only to beginners who desire knowledge of the principles involved and errors to be guarded against but also to more advanced workers. Part I deals with the types of manometers. The theory, which can be followed by any one with a knowledge of the gas laws, is given in detail for the constant volume and differential types. Methods of calibration and other practical details are described. Part II gives in detail the methods for measuring respiration, including the direct method, the first method of Dickens and Simer, the indirect method of Warburg, the second method of Dickens and Simer, the method of Dixon and Keilin and micro methods. These are described in a logical sequence which reveals the advantages or shortcomings of each in particular problems and the need of new and better procedures. Theory, when indispensable to an understanding of the procedure, is clearly presented. Many practical details, some of which would certainly be overlooked by the novice, are mentioned whenever the author thought it expedient, and the necessity for many precautions is explained. A few pages on micro methods and some protocols from actual experiments complete the text. Research workers in the field of manometry will welcome this well written and most helpful laboratory manual.

The Dysenteric Disorders: The Diagnosis and Treatment of Dysentery, Sprue, Colitis and Other Diarrheas in General Practice. By Sir Philip Manson-Bahr, C.M.G., D.S.O., M.D., Senior Physician to the Hospital for Tropical Diseases, Royal Albert Dock and Tilbury Hospitals, London. With an appendix by W. John Muggleton, M.S.M., F.I.M.L.T. Second edition. Fabrikoid. Price, \$10. Pp. 629, with 131 illustrations. Baltimore: William Wood & Company, 1943.

The second edition of this medical classic contains the many advances in etiology, diagnosis and treatment of the dysenteries and related disorders which have been developed in the years since the first (1939) edition. The introduction of sulfaguanidine in the treatment of bacillary dysentery is recorded. In view of the recent new light on the cause of the sprue syndrome and the relationship of this symptom complex to the steatorrhea and fat absorption a new chapter on pellagra has been inserted, a better understanding of the complexities of this nutritional disorder having shed much light on the group of diseases with which it has much in common. Mechanized warfare has changed the habits of men but it has in no way lessened the horrors of these diseases, which take a heavy toll of men in combat areas. This war will do much to spread these diseases abroad throughout the world; hence the value of this authoritative and comprehensive treatise in general practice. It is the outgrowth of many years of practical experience in field and hospital by one of the leaders in this important aspect of private practice, public health and preventive medicine.

Pasteurisation. By Harry Hill, F.R., San.I., A.M.I.S.E., F.S.I.A.; Sanitary Inspector, Borough of Southgate. Fabrikoid. Price, 10s. Pp. 152. London: H. K. Lewis & Co., Ltd., 1943.

This volume is well written and the subject thoroughly covered. The writer is thoroughly familiar with his subject. The concise manner of treating the subject and the absence of burdensome, technical detail and statistics serve to make the volume valuable to health officers lacking special training in milk sanitation. The book merits a wide circulation, especially in communities where raw milk is sold. It should also prove suitable as a textbook in medical colleges and nursing schools. Health officers and legislatures are furnished with sound arguments as to the necessity for pasteurization of milk and milk products. The criticisms of opponents of pasteurization are effectively met. The writer's discussions with respect to modern methods of pasteurization of milk, equipment and plant design and the processing of special milk products are well presented. Although the volume treats with problems in England, this fact should render it no less valuable in this country, since the problems discussed are essentially the same.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MERCURIAL DIURETICS IN NEPHRITIS

To the Editor:—If mercurial diuretics can be safely used in the treatment of edema from chronic nephritis, could favorable kidney function tests, especially urea clearance, be considered as criteria?

F. G. Scovel, M.D., Rochester, N. Y.

ANSWER.—It is doubtful whether mercurial diuretics can be used safely in chronic nephritis. The major indications for their administration are embarrassing accumulations of edema fluid or ascites due to nonrenal causes, such as hepatic cirrhosis, venous obstruction and/or cardiac incompetence. The edema of nephrosis is associated with damage to the convoluted tubules of the kidney; the mercurial diuretics operate largely through impairing the reabsorption of water by these elements, probably by local toxic effects on the tubule cells. Opinion as to the advisability of applying mercurial diuretics in cases of bilateral chronic renal disease is not unanimous. The consensus, however, is to the effect that it is not without hazard. Acute exacerbations of renal injury have been observed.

Favorable renal function test results are suggestive that the mercurial diuretics may be well tolerated. Probably the most useful single test in this connection is the concentration test. The concentration of the urine (specific gravity) is conditioned largely by the functional integrity of the convoluted tubules. Thus, a good response to relative dehydration—specific gravity 1.025 or higher in the Fishberg procedure (Fishberg, A. M.: *Arch. Int. Med.* 38:259, 1926) is indicative of active tubule functioning. The urea clearance test, although, perhaps, more mathematically quantitative, is not as sensitive to early impairment.

There are many other therapeutic methods of attacking edema in chronic nephritis. If due to hypoproteinemia, as it often is, replacement of the depleted serum proteins is indicated. Plasma or whole blood transfusions are often immensely valuable. The xanthine diuretics and acidifying salts (ammonium nitrate, calcium chloride and so on) are often effective and safer than the mercurial diuretics, although the responses are not as dramatic. One must keep in mind that edema fluid is more than merely retained water; it is full of toxic metabolic debris. Too rapid mobilization of intercellular fluid and diuresis are often dangerously intoxicating to a patient already very sick. More gradual reduction is safer. Edema per se in the extremities and loose connective tissue of the body is relatively harmless. One may do more harm than good by concentrating attention on the symptoms and treating the disease rather than the patient who has the disease!

SILVERY LESION OF SKIN

To the Editor:—For approximately a year one of our hospital employees has had a nonpruritic silvery white streaked lesion which resembles scar tissue over the anterior surfaces of the bony prominences of both clavicles. The lesion seems to be slowly spreading. This location would coincide with the neck line of her starched uniform. Would you kindly advise if starch will cause a lesion of this type. If not, what could be the etiology and what do you advise for treatment?

M.D., South Dakota.

ANSWER.—A nonpruritic silvery white streaked lesion suggests several possibilities. By far the commonest of these is linear atrophy of the skin, seen commonly on the abdomen after childbirth. While it is usually thought of as resulting from stretching of the skin, it is also seen in those whose skin has not been subjected to this form of trauma. In many instances it has followed toxic conditions, such as typhoid, tuberculosis or syphilis. The lesions may occur anywhere on the trunk or limbs as narrow lines which are at first brownish or purplish red, later becoming silvery white, slightly depressed streaks which show cross wrinkling. No form of treatment will benefit them. They are scars. A good description may be found in the book by Ormsby and Montgomery (*Diseases of the Skin*, ed. 6, Philadelphia, Lea & Febiger, 1943, p. 492). Direct trauma, such as the rubbing of a starched uniform, is not usually considered important in their causation.

Morphea, localized scleroderma, is not rare and often occurs as band shaped lesions, ivory colored to pure white, often sur-

rounded by a zone of violaceous color. These lesions may occur anywhere on the skin and are at first distinctly infiltrated, later becoming soft and atrophic. They may be slightly elevated or depressed or may be at skin level. Trauma is often suspected of influencing the localization of such lesions, so that the irritation caused by a stiffly starched garment might be of importance. Most commonly they are treated by the administration of thyroid or by roentgenotherapy but so often resolve spontaneously that it is difficult to be certain how much credit the treatment deserves. They may, however, resist all efforts for many months. Boardman (*Scleroderma*, *Arch. Derm. & Syph.* 19: 901, 1929) presents a good discussion of this disease.

There are 2 other remote possibilities. Lichen sclerosis et atrophicus is a rare disease of the skin, considered by Nomland (Lichen Sclerosis et Atrophicus [Hallopeau] and Related Cutaneous Atrophies, *Arch. Dermat. & Syph.* 21:575 [April] 1930) as midway between lichen planus and scleroderma. It appears as light red papules, becoming silvery white with dark colored, depressed puncta, one or several on each papule. The surface is dry and harsh to the touch. While trauma plays an important part in the localization of the lesions of lichen planus, forming linear groups as a response to scratching, no such effect is evident in the rare atrophic disease. The patches are groups of discrete papules or macules in roughly round or oval form. This disease is much less amenable to treatment than is lichen planus.

Pseudoxanthoma elasticum is a rare disease of the skin often associated with angioid streaks of the retina. It occurs as yellowish papules in groups or lines, often on the neck. Recently Silvers and Wolfe (Pseudoxanthoma Elasticum with Angioid Streaks, *Arch. Dermat. & Syph.* 45:1142 [June] 1942) have reported a case in which the lesions in the axilla were "chalk white." This also is a degenerative disease not amenable to treatment and important because of its retinal lesions, which often lead to blindness.

PROBABLE ATYPICAL THROMBOCYTOPENIA

To the Editor:—A woman aged 38 has had attacks of acute bone necrosis, with the local manifestations of a bone infection but without the systemic symptoms that would accompany a true osteomyelitis. Two years ago following a right sacroiliac sprain there developed ecchymoses of the tissues overlying the joint. The joint was painful and swollen, but there was no systemic evidence of infection. The joint was opened, and a necrotic area the size of a quarter (24 mm.) was curetted. Convalescence was complete. One year later the process repeated itself in the tenth rib, left side, anteriorly. A section was resected and reported osteomyelitis. However, growth of bacteria was not obtained and the guinea pig inoculation was negative for tuberculosis. About six weeks ago the left elbow became swollen and discolored, with areas of ecchymosis around the entire joint. Pain and tenderness is severe. A cast was applied, and improvement was noted only to regress to an acute condition shortly after cast was removed. The past history includes cholecystectomy fifteen years ago and cystic mastitis twelve years ago, followed by postoperative hemorrhage. X-ray sterilization was done three years ago for severe menorrhagia and migraine. The migraine disappeared after the x-ray treatment. The patient has had the following medication for many months: 1. Weekly injections of estrogenic substance 10,000 units gradually reduced to 5,000 units. 2. Thirty grains (2 Gm.) of calcium lactate daily. 3. Ascorbic acid 100 mg. three times a day with intramuscular injections of a like amount twice weekly. 4. Adrenal cortex extract 1.5 cc. twice weekly. 5. Vitamin K 2 mg. with bile salts daily. Repeated x-ray examinations of the elbow involved have been negative for a pathologic condition of the bone; the urine is normal; the Wassermann reaction is negative; hemoglobin is 75 per cent; the red blood cell count is 3,790,000; the color index is 1; leukocytes number 8,450, with polymorphonuclear cells 69 per cent, eosinophils 1 per cent, basophils 2 per cent, monocytes 2 per cent and small lymphocytes 26 per cent. The bleeding time was 25 minutes, coagulation time was 8 minutes and blood platelets were 65,000. There was no retraction of clot after five and one-half hours. Is this a case of idiopathic thrombocytopenia and if so what is the best recommended treatment?

Stanley P. Jones, M.D., Mattituck, L. I., N. Y.

ANSWER.—Idiopathic or essential thrombocytopenia rarely is associated with hemorrhages into isolated joints, soft tissues or bones. Purpura is almost a constant finding in thrombocytopenia. The symptoms in this case have occurred over a period of years. The lesions described may have been produced by hemorrhages into subcortical bone or into the joint. The symptoms and findings of thrombocytopenia include (1) purpura, (2) hemorrhage from slight traumas, (3) increased bleeding time, (4) normal coagulation time, (5) absence of clot retraction, (6) decreased capillary resistance, (7) decrease in blood platelets and (8) moderate decrease in hemoglobin or red cell count.

For the patient described several of the findings mentioned have been noted. These include hemorrhage into the tissues, increased bleeding time, normal coagulation time, absence of clot retraction, decrease in blood platelets and a mild secondary anemia. If cutaneous purpuric lesions were ever present they were either not recognized or the description of them was omitted. Although the case would have to be considered atypical, a diagnosis of chronic essential thrombocytopenia would

seem to be justified. If, in addition to the findings described, capillary resistance could be shown to be decreased and repeated examinations of the cutaneous surfaces of the bone should reveal at any time a purpuric rash, the diagnosis could be considered to be confirmed.

It would be advisable to ascertain with certainty that this patient has or has not been intermittently exposed to such toxic agents as benzene, arsenobenzene, quinine or sedormid. Any one of these drugs or chemicals may be the etiologic factor producing secondary thrombocytopenia.

Treatment of thrombocytopenia, in addition to the medication which this patient has already been receiving, might include an occasional blood transfusion, the injection of 20 cc. of the patient's own blood intramuscularly or the intramuscular injection of sterile milk.

The snake venom treatment has been reported both favorably and unfavorably. Moccasin venom is used in a dilution of 1:3,000. An intracutaneous wheal is first made to test for sensitivity, and this will usually be found to be positive. If, following the series of injections, the intracutaneous venom reaction becomes negative, the prognosis may be considered to be more favorable than if it remains positive. Four-tenths cc. of the described dilution of moccasin venom should be injected subcutaneously or intramuscularly twice the first week. The dosage can be increased 0.1 cc. each week until 1 cc. doses are given, provided there is no severe systemic reaction.

If the patient does not improve, and certainly if in spite of treatment the hemorrhagic symptoms become more pronounced, the removal of the spleen will be definitely indicated. About 75 per cent of patients with chronic thrombocytopenia subjected to this operation have made complete or symptomatic recoveries. On the other hand, splenectomy may be attended by severe hemorrhage, shock and death. Only the most highly skilled and trained abdominal surgeons should undertake the operation or removal of the spleen.

JAUNDICE, BAD TASTE IN MOUTH AND POSSIBLE CHEMICAL CAUSATION

To the Editor:—A man aged 38, a construction worker who had never been seriously ill, began to cough a great deal in January 1943 and complained of frequent nausea. At the same time he noticed a peculiar taste in his mouth, which could not be influenced by any means. In February there developed pain in his right chest and he went to bed. The cough continued with the expectation of "thin" mucus, and his general condition deteriorated to such an extent that he was unable to work. He complained then of frequent dizziness and faint spells. He had lost by that time some 30 pounds (13.6 Kg.). After he had gone to bed in February a yellow discoloration of the skin which had been noticed by his friends became more intense. Three weeks thereafter he reports that his gums became dark, almost black, his teeth became brittle after they became "dull" during the early part of his illness, and eventually all his teeth broke off and had to be entirely removed. Eventually the general condition improved, and the patient was able to return to work in June, but up to this time he complained of weakness and soreness in his mouth. The objective findings are essentially negative except swelling and small vesicles of the gingiva. Throughout his illness the patient had not lost the peculiar taste mentioned. In June he discovered accidentally an agent which had the identical taste as that which had bothered him throughout these months, and he found that it was sodium hypochlorite, which was used on his job for sterilizing water containers. The question is now whether this agent could be held responsible for the symptoms of the patient and also whether his illness can be accepted as an industrial accident covered by workmen's compensation.

Gerhard Kersten, M.D., Lycoming, N. Y.

ANSWER.—Many patients with disease states resulting in jaundice complain of persistent abnormal tastes. Any substantial injury from hypochlorite in other than large quantities is almost wholly ruled out through the fact that many hundreds of thousands of soldiers for many years have consumed water treated with such chemicals, and many millions of persons have consumed milk and other foods in contact with utensils and equipment disinfected with hypochlorites and not always under conditions scrupulously accurate as to the quantities of chemicals utilized. Hypochlorites are well known skin irritants in such places as the photographic laboratory and the operating room, in the latter of which hypochlorite solution above 0.5 per cent if used for surgical disinfection may induce skin injury. Lately hypochlorites have been associated with the cause of a minor condition popularly known as "angel eyes," leading to abnormal vision. All considered, no allegation that sodium hypochlorite brought about the condition described in the query may be regarded as substantiated by the facts so far furnished.

The rapid destruction of the teeth suggests the possibility of phosphorus poisoning; the black discoloration of the gums suggests bismuth poisoning or more remotely mercurialism. The key to this case probably is to be found in the type of hepatic disease leading to jaundice. However, the data furnished are

wholly inadequate for the determination of the nature of the jaundice. Without listing the missing essentials, it is apparent that accurate appraisal either of the liver condition or of the chest condition cannot be made.

RECURRENT ATTACKS OF TONIC SPASM

To the Editor:—A boy aged 3½ years was brought to me April 21, 1943 about 7:30 a. m. one hour after his parents had found him in a stupor, his jaws set and his limbs rigid. About thirty minutes before they discovered this condition he had awakened from an apparently normal sleep and had asked for a drink. Before it could be obtained he had dropped off to sleep. He had been perfectly well the day before and had had no previous attacks of any serious illness. After bathing the patient in warm water for ten minutes without any improvement they took him to the hospital. Examination showed that the temperature was 94 F. (checked four times with two thermometers), pulse rate 72, respiratory rate 20. The skin was slightly pale and cold but was dry. He lay quiet and when moved he would moan as if in pain. His eyes were kept shut most of the time. On being opened they rolled up and from side to side and had a glassy stare. The pupils measured 4 mm. and reacted to light. The jaws could not be opened. There was no frothing or bleeding at the mouth. There was no opisthotonos, but there was resistance to flexion of the neck. Both upper extremities were held in rigid flexion. The back and legs were less rigid, but movement was resisted. Examination of the heart, lungs and abdomen was essentially negative. A spinal tap showed water clear fluid and no increased pressure. No protein or cells were found in the laboratory. The only treatment given was application of external heat. In four hours the temperature was normal and the patient began to relax and regain consciousness. By six hours he was taking fluid eagerly and his rigidity and trismus were gone. His stupor gradually left, and in forty-eight hours he was apparently normal. A physical examination at the office six weeks later was essentially negative. On August 14 he had a second attack, similar in every way including the time of day, except that recovery was more rapid. On October 25 he had a third attack, similar in every way except that there was some frothing at the mouth and some clonic movements interrupting the rigidity. This patient is the tenth child in a family of eleven. He has been perfectly well except for these attacks. His diet is average including more than 3 pints of milk daily. There is no history of head injury. There is no known epilepsy in the family. What diagnoses other than epilepsy would you entertain? In what conditions might one find such a low rectal temperature? What studies or treatment would you advise?

M.D., Idaho.

ANSWER.—The case is too complicated and presents so many factors that cannot be explained from the history that exact diagnosis is not justified. Epilepsy might be considered in view of the clonic movements with rigidity and frothing of the mouth noticed on the third attack. The other two attacks, however, are not so characteristic of this disease. The tonic spasm described in the first two spells with setting of the jaw and rigidity of all the limbs, plus the low temperature, suggests a lesion in the region of the hypothalamic centers with a condition known in laboratory animals as "decerebrate rigidity." This is occasionally seen in patients with brain tumors, particularly suprasellar cysts or in hydrocephalus and is a somewhat similar condition to that described by Wilson in 1920. The case here described varies from typical decerebrate rigidity in the flexion instead of the extension of the arms. When rigidity is intense, it is difficult to bring out the tonic reflexes described by Magnus and deKleyn.

The patient requires extensive study. Electroencephalograms should be done and possibly a ventriculogram. These studies can best be carried out in a large center where there is a fully equipped neurologic clinic.

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PANNICULITIS RESEMBLING SCLERODERMA

To the Editor:—Does an active panniculitis develop in lesions of scleroderma? Is it possible for a chronic localized form of panniculitis to undergo secondary sclerosis with the development of a scleroderma-like condition?

Samuel Irgang, M.D., New York.

ANSWER.—There are several reports of cases of nodular, non-suppurating panniculitis which at some part of their course resembled morphea.

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TSUTSUGAMUSHI FEVER IN THE SOUTHWEST PACIFIC THEATER

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MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

CAPTAIN JACK LIPSHUTZ

MEDICAL CORPS, ARMY OF THE UNITED STATES

This study comprises some 70 cases of tsutsugamushi fever. Most of the patients resided for a period of weeks to several months in an area which has proved endemic for the disease. This paper represents our observations and the experimentation and study possible with limited equipment while working under field conditions. Should this information serve to stimulate further laboratory experimentation and give the profession a better conception of the military and economic importance of this disease, we would feel our efforts well spent.

Until recently the condition about to be considered has not been given the space it deserves in American medical textbooks, owing in part to our lack of interest from the economic standpoint in many of the tropical and subtropical countries. The advent of World War II has, however, changed the picture entirely. We now find not only the men of allied armed forces but our own men suffering the ravages of this fever in many tropical areas. The total man days lost from this disease have presented a problem. This, together with the great advance in air transportation expected in the postwar period, tends to make the disease one of considerable military and economic importance.

Tsutsugamushi fever is to us a suitable name for the disease here described. Tsutsugamushi has been associated with this particular type of fever in Japan since 1899. The name means "dangerous bug fever," which, although it gives no indication of its relation to the typhus group of fevers, is entirely adequate. A comparison of tsutsugamushi fever in Japan with rickettsial fevers as reported from Sumatra, Malaya, New Guinea and other territories under names such as Sumatran fever, K typhus, scrub typhus and Kedani disease shows

a high degree of similarity. Although it has not yet definitely been proved, these diseases appear to be identical. Minor differences might be explained on the basis of the change in virulence of the organism in different localities.

For reasons of military security, we are unable, at the time of this writing, to state our exact location in the tropics.

EPIDEMIOLOGY

Sambon¹ stated that the association between mites and disease has been known for over a thousand years. Tanaka² attributed the "river fever of Japan" to a minute red mite locally called Kedani mite.

There is reasonable evidence to indicate that the cases as reported from Formosa, Korea, Sumatra, India, Malaya, New Guinea and more recently North Queensland, Australia, are probably the same tsutsugamushi fever originally described as occurring in Japan. The pseudo-typhoid as reported by Schüffner³ we believe to be a mild form of tsutsugamushi fever. A low death rate, lymphocytosis and general distribution of rash are not sufficient differential points. The virulence of the micro-organism unquestionably varies in different localities and probably accounts for Schüffner's findings.

The endemic nature of this disease is well known. The majority of our cases occurred in an area of about $\frac{1}{2}$ square mile at an elevation 100 feet above sea level. The annual rainfall has varied from 100 to 120 inches, the highest level occurring during the months of December, January, February and March. It is terrain which is a favorable habitat for rodents; the condition of the ground and type of vegetation are ideal for the larval mite.

Our patients for the most part gave histories of having been in wooded sections, logging or clearing areas where the vegetation is dense. In the process, many contracted the disease. This type of history is quite typical and coincides with the observations of Heaslip⁴ as described in his report from the West Cairns area of North Queensland.

Sufficient time has not yet elapsed to evaluate fully the seasonal factor. It is doubtful, however, that the season will be of any consequence in this particular territory.

The characteristic regional habitat is the scrub along the small streams and areas of dense damp jungle. We also found mites to be prevalent near the sago palm

Major Ahlm was formerly instructor, MRTC, Camp Grant, and at present is flight surgeon with a unit of the AAF.
Captain Lipshutz of the staff of Jewish Hospital, Philadelphia, on leave of absence, is at present assigned to the medical service of a station hospital.

Major Charles L. Garcia, commanding the station hospital, permitted us to review the clinical records in these cases. Capt. R. N. McCulloch of the Third Australian Mobilization Entomological Section gave suggestions and assisted in identifying several specimens of acarina. Drs. K. F. Maxey and F. G. Blake of the American Typhus Commission gave constructive criticism and suggestions. Professors Harvey Sutton and J. W. Fielding of the School of Tropical Medicine, University of Sydney, collected and forwarded Dr. Gunther's papers. Major Markle donated the photographic illustrations. S/Sgt. Norman W. Ibbotson and T/5 Max Davis, Medical Department, U. S. Army, gave much of their free time to typing the manuscript.

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swamps margined by kunai grass. Where the kunai grass grew tall in natural clearings adjacent to the jungle, only occasional mites could be found.

ETIOLOGY

A number of early investigators proved the rickettsial nature of this disease, although the specific rickettsia producing tsutsugamushi fever is a matter in which

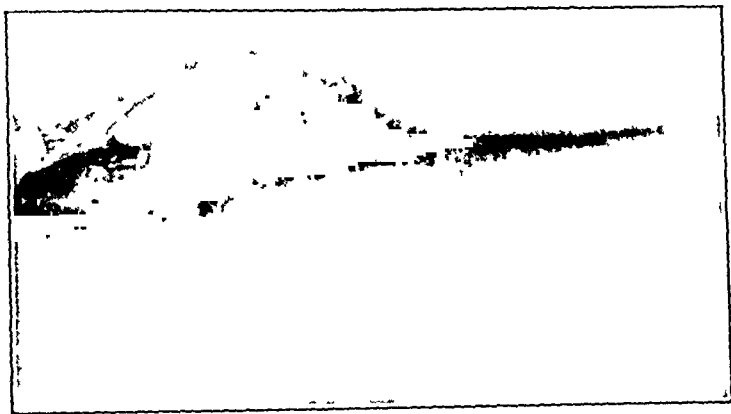


Fig 1—Regional lymphadenopathy.

there is some difference of opinion. It is possible here only to state briefly the findings of a few early investigators.

Hayashi⁵ was first to call the organism causing tsutsugamushi fever in Japan the *Rickettsia tsutsugamushi*. Kawamura and Imagawa⁶ identified the organism as *Rickettsia akamushi*. Sellaris⁷ proposed the name *Rickettsia nipponica* for it. Ogata⁸ confirmed the findings of Hayashi, naming *Rickettsia tsutsugamushi* as the etiologic agent. Reasonable proof exists that these organisms are identical. Lewthwaite and Savor⁹ by means of elaborate and exhaustive cross immunity experiments showed the similarity between scrub typhus and Japanese river fever both by intraocular and by intradermal reactions in rabbits and monkeys. In cross protection tests between the organisms of Sumatran fever and the tsutsugamushi of British Malaya performed on rabbits and monkeys it was the conclusion that these are also identical diseases.

The difficulty of demonstrating rickettsias in human tissue sections is common knowledge, and to date we have been unable to do so. In the future, if the laboratory is able to demonstrate rickettsias in the tissues of cases which come to autopsy, the morphologic characteristics should coincide in a general way with the description as reported by Hayashi.

Hayashi's description will serve to exemplify the typical rickettsial micro-organism producing the disease. He reported a minute rod or spheroid body demonstrable in the cytoplasm of lymphocytes and endothelial phagocytes of the tissues of the local lesion, lymph nodes and spleen, using Giemsa's stain. This he classified as *Theileria*, but it has since been classified with the genus *Rickettsia* (*R. tsutsugamushi*).

Dr. Fielding¹⁰ has kindly consented to attempt the demonstration of rickettsias in some of our arthropod

specimens, using his Modified Breinl method. At a later date we hope to report the results of this experiment.

THE VECTOR

The larval form of the mite genus *Trombicula* is to date the only mite known to be definitely associated with tsutsugamushi fever. Several species of *Trombicula*, and even variants of one species, may be vectors in different localities.

The eggs of the genus *Trombicula* are laid in clusters in the soil several inches below the surface. Here the ova hatch, later passing through the various developmental stages to the adult form. The larvae are small, microscopic, six legged creatures which move about on the ground or herbage until able to attach themselves to a passing host. Rodents, marsupials, birds, bush fowl, lizards or man may provide the blood meal for these larval mites. The nymph and adult probably feed on vegetation, but little is known of their habits.

The rickettsial infection transmitted by the larval mite is apparently inherited from the parent, the larvae not feeding a second time.

Trombicula akamushi was found to be the vector of this disease in Japan. Walch and Keukenschrijver¹¹ reported *Trombicula deliensis* to be the vector in the Dutch East Indies, and Gunther,¹² working in New Guinea, named what he thought at that time was a local variant of *Trombicula deliensis* and called it *Trombicula vanderghinstei*. It is highly probable that *T. akamushi* and *T. deliensis* are at most variants of the same species.

We have collected specimens of *Trombicula* and *Gnatharana* and occasional ticks about the ears and genitalia of field rats and mice killed in this locality. Other specimens, including *Trombicula minor* and *Trombicula fletcheri*, were obtained by standing in a selected area of tall grass or vegetation where the mites would readily crawl on the footgear, being easily removed with the aid of a small camel hair brush. Specimens were placed



Fig 2—Primary lesion

in 70 per cent alcohol temporarily, then mounted on slides for identification. All the specimens we have seen were prepared by the use of Berlese's modified

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medium.¹³ Capt. R. N. McCulloch mounted and identified some of our specimens; several were also sent to a laboratory of microbiology and pathology.

Specimens of *Trombicula* are numerous in this area; but the determination of the specific species or variants is extremely difficult, since so many species have already been classified. Until we have completed further laboratory work it is impossible for us to state with accuracy the specific species of *Trombicula* responsible for the fever in this area. We are highly suspicious at this time of three species: *T. minor*, *T. deliensis* and *T. fletcheri*, or perhaps even variants of these species may be responsible for our series of cases. Although ticks (*Dermacentor andersoni*, *Dermacentor variabilis*, *Rhipicephalus sanguineus*) transit other rickettsial diseases, none have as yet been proved vectors for *Rickettsia tsutsugamushi*. The possibility, however, must be considered as new varieties are found and classified.

Trombicula larvae attack regions of the body about the waistline, the scrotum, groin and armpits. It appears to be where the degree of moisture is favorable. The pressure of the clothing is important only because it would tend to increase the moisture of the skin where pressure exists.

In areas a considerable distance from our camp site we have found many mites of genus *Schongastia* and *Neoschongastia*. These are apparently the cause of the common tropical ailment known as scrub itch.

THE RESERVOIR

A previous worker reported natural infection in rats and bandicoots. A series of titers were accomplished on blood from rats trapped in the North Queensland area of Australia. He extracted blood by intracardial puncture, testing by OXK and OX19 agglutination with positive titers (OXK) and in a high percentage of the rodents. We are endeavoring at present to confirm his findings using specimens collected here and will report our findings in a subsequent paper.

Ectoparasites have been removed from the ears and about the genitalia of rats trapped in our area, as previously stated. Many of these were specimens of *Trombicula*, the species of which were quite varied. Several specimens of *Guntherana* were also removed from the rodents. It is our opinion that the field rat is the principal reservoir in this region, the others being of lesser importance.

Gunther lists some seventeen hosts of the larval mite, including the bush fowl, swamp hen, parrot, rat, bandicoot and wild pig. We cannot agree with Gunther in excluding lizards as hosts of the larval mites, since we found numerous larval mites attached to lizards in this vicinity. We were not able to identify the occasional ticks recovered.

CLINICAL REPORT

The most common location of the primary lesion of this disease is the scrotal area, though the inguinal and ankle areas are frequently involved. After an incubation period of seven to fourteen days, the patient complains of headache (frontal), generalized aches and pains, backache, weakness, insomnia, chilliness and fever. A small number complain of pain in the abdomen, with associated nausea and vomiting and occa-

sionally diarrhea. The ulcer varies in size from a few millimeters to 1 centimeter in diameter. Characteristically, a central black necrotic area develops, surrounded by an indurated red areola. Rarely a lymphangitis can be observed tracing its way to the local lymphadenitis. These glands are usually enlarged to the size of a walnut, smooth, tender and not attached to the adjacent

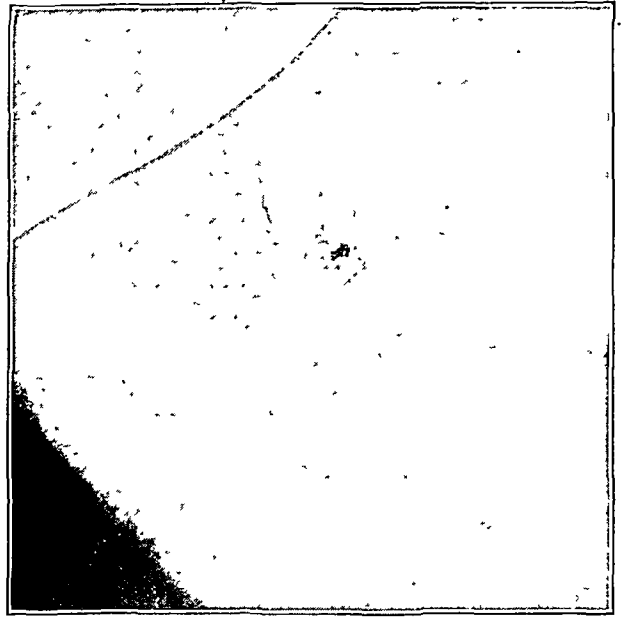


Fig. 3—Primary lesion.

glands or tissues. They do not suppurate. Few cases show a generalized lymphadenitis. The adenitis appears from three to four days after the onset of symptoms. The temperature rises slowly, reaching a peak of 104 or 105 F. within ten days. The pulse is slow in proportion to the temperature rise. A conjunctivitis with mild edema of the eyelids is present. A dusky flush is seen in many instances on the face and neck. As the disease progresses the patient becomes weaker and a generalized myotonia becomes more pronounced. About the fourth day after the appearance of the adenopathy a macular erythematous patchy rash can be observed over the face, chest and abdomen, many of the described areas having a pale raspberry-like appearance. At the height of the disease about 67 per cent of the patients show severe atypical pneumonic signs, with a dry cough and scanty expectoration, and complain of dyspnea and tightness over the sternum. In a few cases there is evidence of consolidation. X-ray examination of about 20 per cent of these cases showed an atypical virus-like pneumonia. Epistaxis was also found in about 20 per cent of our cases and came on at the height of the rise of temperature. Conjunctival hemorrhage has been present in a few cases. Abdominal distention with nausea and vomiting was present in about 60 per cent of our cases and made treatment a difficult problem. About 34 per cent of our cases showed auditory disturbances from mild diminution of hearing to almost complete deafness. Cerebral typhoidal signs are present in many cases, with hallucination, disorientation, insomnia and nervousness being the outstanding features. The elevated temperature continues for ten to fourteen days, during which time the patient is extremely weak and perspires profusely. Myocardial damage has been observed late in the disease, in 3 cases manifested by

13. Modification of Berlese's medium used for the mounting of *Acarina*:

Distilled water.....	100 cc.
Chloral hydrate.....	50 Gm.
Gum arabic.....	40 Gm.
Phenol.....	50 Gm.
Glucose syrup.....	10 Gm.
Glacial acetic acid.....	20 cc.

gallop rhythm, reduplication of the mitral first sound and muffled apical sounds. These are poor prognostic signs and were present in the one death that occurred. The rash usually disappears in from three to five days. The temperature falls by lysis, and convalescence is

agglutination. Many patients with a high titer are mildly ill. We have found that nearly all patients with a low titer showed no primary ulcer. Whether this is due to a different or to a weaker strain of *Rickettsia* remains to be proved.

Signs and Symptoms of Tsutsugamushi Fever with the Eventual Outcome in a Series of Seventy Cases

Name	Headache, Chills, Weakness, General Aches	Admission Average Temp. and Pulse Rate	Temperature	Pulse	Ulcer	Adenopathy	Rash	Pneumonic Signs	Diminished Hearing	Epileptics	Abdominal Distention	Agglutination Titer of OXK	White Blood Cells	Recovered	Death
R. W.	5 days	101	82			Inguinal	++	+	—	—	+	1:80	14,250	+	—
D. G.	1 day	101	88		Serotum	Inguinal	++	+	—	—	+	N. D.	5,200	+	—
C. E.	1 day	102.8	94		Thigh	Inguinal	++	+	—	—	+	1:320	2,900	+	—
H. K.	7 days	102.8	90			Inguinal and axillary	++	+	+++	+	+	1:40	6,000	+	—
J. S.	2 days	102.4	70			Inguinal	++	—	—	—	—	1:160	6,400	+	—
N. H.	2 days	102	89			Inguinal	++	+	—	—	—	Negative	9,200	+	—
G. E.	2 days	101.2	80			Inguinal	+	+	—	—	+	N. D.	6,400	+	—
E. S.	7 days	102	100			Inguinal	+	—	—	—	+	1:40	7,200	+	—
W. R.	1 day	101.2	88				+	—	—	+	—	1:80	5,200	+	—
C. M.	5 days	102	96				++	+	—	—	+	1:80	5,200	+	—
H. B.	3 days	101.4	88		Thigh	Inguinal	++	+	—	—	+	1:80	4,850	+	—
R. H.	2 days	102.8	86			+	+	—	—	—	+	1:80	10,000	+	—
R. F.	2 days	102	78		Ankle	Inguinal	+	—	—	+	—	1:640	7,200	+	—
B. K.	3 days	101	80		Ankle	General	++	—	—	—	+	1:640	5,450	+	—
J. B.	2 days	102	88		Thigh	Inguinal	+	—	—	—	—	N. D.	5,950	+	—
F. G.	2 days	101.2	77			Inguinal and axillary	++	—	—	—	+	1:160	No data	+	—
J. B.	2 days	102.4	96		Ankle	Inguinal	+	—	—	—	+	1:640	No data	+	—
E. B.	5 days	102.4	96		Serotum	Inguinal	++	+	—	—	+	1:640	No data	+	—
J. M.	3 days	102	96		Serotum	Inguinal	++	+	—	—	—	N. D.	6,400	+	—
L. R.	3 days	101.2	78		Serotum	Inguinal	++	+	—	—	—	1:320	7,200	+	—
W. S.	2 days	102.2	78		Thigh	Inguinal	++	+	—	+	+	1:320	No data	+	—
S. G.	1 day	102.6	97		Serotum	Inguinal	—	+	—	+	+	1:320	No data	+	—
J. T.	1 day	100.8	80		Ankle	Inguinal	—	+	—	—	+	N. D.	6,400	+	—
R. W.	1 day	101	100		Serotum	Inguinal	+	+	—	—	+	1:640	9,900	+	—
F. C.	1 day	102.2	96		Inguinal	Inguinal	++	+	—	—	+	1:1280	6,400	+	—
W. L.	1 day	102	88		Inguinal	Inguinal	++	+	—	—	+	1:640	No data	+	—
J. K.	1 day	101.8	80		Serotum	Inguinal	++	+	—	—	—	1:640	4,750	+	—
A. P.	3 days	101	88		Inguinal	Inguinal	++	+	—	—	+	1:640	No data	+	—
L. R.	2 days	101.2	76		Inguinal	Inguinal	+	+	—	—	+	N. D.	No data	+	—
W. F.	2 days	102.4	88		Serotum	Inguinal	++	+	—	—	+	1:40	6,400	+	—
E. B.	5 days	100.2	80		Ankle	Inguinal	++	+	+	+	+++	1:160	7,200	+	—
L. F.	3 days	102.4	88		Ankle	Inguinal	++	+	+	+	+	1:320	5,950	+	—
M. V.	1 day	101.4	80			Inguinal	++	+	—	—	+	1:160	No data	+	—
L. B.	1 day	102	90			General	++	+	—	—	+	1:1640	7,200	+	—
A. E.	1 day	101.4	80		Serotum	Inguinal	+	—	—	—	+	1:1280	8,400	+	—
A. C.	3 days	102.4	80			Inguinal	—	—	—	—	+	1:80	No data	+	—
A. G.	2 days	102.8	88				—	—	—	+	—	1:80	8,400	+	—
E. S.	2 days	100.4	88		Inguinal	Inguinal	+	+	+	—	—	1:160	4,500	+	—
W. S.	1 day	101	88			Inguinal	+	—	—	—	—	1:1640	No data	+	—
G. N.	3 days	101	84			Inguinal	+	—	—	—	—	N. D.	No data	+	—
F. V.	1 day	102.6	96		Serotum	Inguinal	++	—	—	—	—	N. D.	No data	+	—
R. M.	3 days	100.4	96		Inguinal	Inguinal	++	—	—	—	—	1:640	No data	+	—
A. H.	2 days	101.2	80		Serotum	Inguinal	++	—	—	—	—	1:160	6,700	+	—
G. B.	2 days	102	86		Serotum	Inguinal	++	+	—	+	—	Negative	7,200	+	—
C. A.	1 day	100.4	84		Inguinal	Inguinal	++	+	—	+	+	1:640	No data	+	—
E. M.	2 days	101	88		Serotum	General	++	+	+	+	+	1:80	2,800	+	—
J. S.	2 days	102.2	84		Serotum	Inguinal	++	+	—	—	+	1:80	7,700	+	—
H. F.	7 days	102.6	88		Ankle	Inguinal	++	+	—	—	—	1:640	7,900	+	—
J. P.	3 days	103	96			Inguinal	++	+	—	—	—	1:160	No data	+	—
P. J.	4 days	101.2	88		Ankle	Inguinal	++	—	—	—	—	1:640	No data	+	—
I. F.	3 days	103.2	96		Popliteal space	Inguinal	++	+	—	—	—	1:640	3,900	+	—
C. B.	2 days	102.4	100		Popliteal space	Inguinal	++	+	+	—	—	N. D.	8,400	—	+
J. B.	4 days	100.2	76		Popliteal space	Inguinal	++	—	—	—	—	1:320	No data	+	—
J. H.	1 day	102	76			Inguinal	++	—	—	—	—	1:160	No data	+	—
R. R.	2 days	102.8	96			Inguinal	++	+	—	—	—	1:640	No data	+	—
M. N.	1 day	103	88				++	+	+	—	—	1:320	No data	+	—
U. R.	2 days	102	86		Inguinal	Inguinal	++	+	+	+	+	.....	No data	+	—
S. C.	5 days	101.6	96			General	++	+	+	—	—	Negative	7,200	+	—
F. A.	3 days	101.4	96		Ankle	Inguinal	++	+	+	—	+	1:640	No data	+	—
J. D.	5 days	102	96		Thigh	Inguinal	++	+	+	—	+	1:640	4,850	+	—
M. C.	5 days	103.4	96		Ankle	Inguinal	++	+	+	—	+	1:40	6,750	+	—
A. P.	3 days	102.2	88		Thigh	Inguinal	++	+	+	+	+	Negative	1,400	+	—
R. D.	3 days	102.6	96			General	++	+	—	—	—	Negative	8,400	+	—
A. H.	2 days	102	96		Thigh	Inguinal	++	+	+	+	+				
C. T.	3 days	102.6	96		Popliteal space	Inguinal	++	+	+	—	+				
E. G.	2 days	101.6	100			Inguinal	++	+	+	—	—	.....	No data	+	—
G. K.	1 day	101.4	86		Thigh	Inguinal	++	+	—	—	—	1:160	No data	+	—
P. M.	3 days	102.4	86			Inguinal	++	+	—	—	—	1:40	6,700	+	—
J. A.	2 days	103.2	94		Serotum	Inguinal	++	+	—	—	—	1:80	8,400	+	—
M. P.	2 days	102.6	90		Serotum	Inguinal	++	+	—	—	—				

long. It has been our experience that the white blood cell count is of little diagnostic value, though more than a few cases show a leukopenia with a relative lymphocytosis. The specific agglutination test OXK is negative early in the disease and continues the same through the height of the fever, becoming positive about the second week of the disease. A few cases never become positive. We have not been able to form any correlation between the degree of morbidity and the titer of

PATHOLOGY

In this disease we were able to find no distinctive gross pathologic changes aside from the characteristic cutaneous lesion and enlarged regional lymph nodes. The picture in general is one of visceral congestion. We observed in the heart some petechial hemorrhages through both the pericardium and the myocardium. The cardiac musculature also was quite pale in appearance. The spleen and liver were slightly enlarged. The lungs

exhibited a patchy consolidation similar to an atypical pneumonia. In the brain there was evidence of a vaculitis in the pons and medulla.

DIAGNOSIS

The diagnosis of this condition should not be difficult. In many instances the history will be extremely helpful, the patient having been logging or having cleared sections where vegetation is dense. The endemic nature of the disease, together with the characteristic initial lesion, the regional lymphadenopathy, typical rash, presence of OXK and absence of OX2 and OX19 should prevent error. Mouse inoculation, using blood of the infected patient, and later demonstrating rickettsias in a smear made from pleural effusion, can be used to affirm the foregoing and differentiate the disease from Rocky Mountain spotted fever and typhus.

Typhoid can be excluded by the history, absence of the primary ulcer and the type and time of appearance of the rash, together with the positive Widal agglutination. In plague there rarely is a primary ulcer, the disease is typically epidemic, and the bacillus may be removed from the blood or sputum. The history of rat bite, the relapsing type of fever, leukocytosis, the characteristic rash, the recovery of the spirillum and absence of OXK will differentiate this condition from rat bite fever.

TREATMENT

The most important factors in the treatment of this condition is, in our opinion, absolute bed rest and adequate nursing care, following the line of symptomatic treatment. Acetylsalicylic acid has been found adequate in the control of the severe headache. We discontinued the use of codeine, for in many cases it led to an abdominal distention which interfered with food intake. Fluids and fruit juices are forced (*ad libitum*). Alcohol sponges, enemas and ice caps to the head are used to control the temperature, but apparently nothing has any effect in keeping it down. It has been reported by another group (Australian) that a fall in blood chlorides associated with a fall in blood pressure takes place. We have not been able to affirm this finding as yet owing to the field conditions under which we are working, though we attempt to maintain the chloride level by the oral administration of sodium chloride tablets. Under the regimen we find that the blood pressure remains stable though below normal. We do not feel that the sulfonamide drugs are of value in treating this condition. A number of our patients showing pneumonic signs were given sulfadiazine in adequate doses with no visible effect on the temperature, the duration or the pathologic changes in the lungs. Abdominal distention with nausea and vomiting was the most difficult problem with which we had to contend. Because of the myocardial pathologic condition, a perivascular infiltration of lymphocytes and monocytes throughout the cardiac musculature, we feared giving large doses of saline solution and dextrose by vein. Fifty cc. of 50 per cent dextrose given every four to six hours, in several cases, seemed to be tolerated well. A mild degree of dehydration does not appear to affect the course of the disease. If fluids must be given parenterally, hypodermoclysis is the method of choice. The vitamin need is important both in the active and in the convalescent phase of the disease. Vitamin B complex should be given, supplemented with large doses of multivitamin capsules. Digitalis when given in these cases showing signs of beginning cardiac failure seems to have no effect on

the rate or the rhythm, nor does it affect the outcome in any way. The role of oxygen in the treatment of this condition is overrated. We believe that the dyspnea is due to a venous stasis and a myotonia of all the muscles involved in respiration plus possibly a central respiratory depression. Anxiety and fear play also a major role in this phase of the disease. We have found that with reassurance and sedation this phase subsides. The use of sedatives cannot be overemphasized. Enough must be given to stop the nervousness and allay the anxiety as well as to insure adequate rest. Some clinicians have used lumbar puncture for relief of the cerebral symptoms, but we have found no indication for its use. The use of convalescent serum occurred to us on many occasions, but we feared its use for two reasons: 1. We do not know when the blood stream of the convalescent is free from rickettsias. 2. Would the patient stand the shock of its use? We could not attest the value of immune serum, for we had none. The importance of this disease can be realized only when one examines the facts. Malaria lends itself to treatment readily and has an exceedingly low mortality rate, with only about fourteen man days lost. Tsutsugamushi fever, on the other hand, lends itself to treatment very poorly and has a fairly high mortality rate (considering other figures), with at least one hundred man days lost.

Understanding these facts, the seriousness of the problem cannot be overlooked.

PROPHYLAXIS

We have no information at this writing that inoculation to prevent tsutsugamushi fever in man has proved to be of value. Vaccines from the other rickettsial fevers have had no appreciable effect as a prophylactic measure. The prevention of this disease is largely one of individual protection, the use of insect repellents, proper clothing and the adequate preparation of the site to be subsequently occupied by troops.

The present type of warfare calls for rapid movements of large bodies of troops. This tends to favor exposure to this disease. We advise strongly that where possible areas to be occupied by troops for even short periods be adequately cleared of grass and vegetation by advance details. Natives are often able to give valuable information concerning the conditions in any specific area and should be engaged to assist in preparing the camp site. Troops if possible should employ native labor for any logging required in the construction of buildings.

The camp site is best prepared by cutting and then burning the entire area. This assists in destroying the favorable habitat for infected rodents, and while it does not guarantee destruction of mites it permits the sun to dry the ground sufficiently to produce unfavorable conditions for their existence. Needless to say, the use of rat poison to control the rodent population is necessary.

Troops passing through areas where the disease has been known to occur should at no time be permitted to sleep on the ground. Among paratroops this may become a difficult problem. The use of a hammock of simple construction and of a light weight might prove a solution. In permanent and semipermanent camps, sleeping quarters should be elevated to 4 feet off the ground. Where possible, spraying of the infested ground with a petroleum emulsion is highly advisable.

For individual protection the socks and lower portion of the trousers should be treated with repellent. Apply a small quantity, sufficient to wet the palmar surface of

both hands, then smear over socks and an area up to 6 inches above the trouser cuffs. A high boot or footgear can then be pulled on over the socks. Dusting the body with equal parts of sublimed sulfur and talcum is also recommended.

We have found in a series of experiments that the repellent now in use by the U. S. Army is highly satisfactory if properly applied. The secret of most repellents is knowing how to use them. In our series of experiments to determine the effect of commonly used insect repellents on larval mites it was found that larval mites will not pass through the ordinary khaki uniform worn in tropical areas. The mites will, however, penetrate the mesh of the standard issue wool socks but their progress is greatly deterred. With the treated sock, the arthropod is dead before being able to pass through the sock to the skin. Repeated lectures and demonstrations on the use of repellents by the individual unit are of great value, emphasizing also the need to follow each day's work by a thorough soap-up and shower or bath.

The use of the much talked about mite proof suit as devised by Hayashi and Nagayo appears costly and impractical. The use of solution of sulfurated lime to bathe the parts of the body exposed to mite bites has been suggested by other workers, but we have had no experience with it.

AMERICAN RED CROSS BLOOD DONOR SERVICE

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The American Red Cross Blood Donor Service is the sole agency through which the men and women of this country give their blood to the Army and Navy for the preparation of plasma and serum albumin. From its inception in February 1941¹ until Nov. 1, 1943 the Blood Donor Service has collected almost 5,000,000 pints of blood. The service has undergone enormous expansion during the past year in order to accomplish this production. In a project of such scope dealing with so many individuals from coast to coast, it is only natural that all phases of its operation are, and should be, continually before the professional and public eye. This, in effect, is a report concerning the activities of the service, both from the medical and from the statistical point of view.

SCOPE

The American Red Cross Blood Donor Service at present is undoubtedly one of the largest controlled medical projects ever undertaken. As the service looks forward in the next twelve months to continuation of the present scale of activity, it will probably approximate in numbers the large inoculation and vaccination programs. At present thirty-five blood donor centers are in operation in the larger cities of the country.² Their work is augmented by sixty mobile units, which operate from these centers and extend their activity

to seven hundred and eighty additional cooperating chapters of the Red Cross. Through their combined activity they reach approximately 45 per cent of the estimated population of the country. During the past six months between 95,000 and 110,000 donors have appeared each week either at the centers or on mobile unit stations. Considering the age limits and the health standards imposed, and with allowance for those in the armed services, the program would require that 1 out of every 4 persons in the areas covered by the Blood Donor Service would have to contribute a pint of blood within the next twelve months to maintain the program. As will be seen, actually the present rate of redonations is such that this vast coverage will not be necessary.

TECHNIC AND EQUIPMENT

The fundamental conception of the bleeding technic as previously described remains the same.³ However, with increased efficiency gained by experience in the service, production per doctor and nurse has greatly increased. This has been made possible by the untiring efforts of a vast number of Red Cross volunteers, many of whom have devoted as much time to the project as the full time paid personnel. The 100,000 donors who appear each week to give blood are examined and cared for by 129 physicians and 911 nurses. This concentration of professional services has been accomplished only by insistence on full time personnel to carry out the essential procedures and by the transfer of as much responsibility as is compatible with safeguarding the donor—first from doctor to nurse and second from nurse to nurse's aide and other qualified Red Cross volunteers. Eighty per cent of the physician personnel has been provided by the Army and Navy. These medical officers are either on limited service or have a temporary disability that makes them unsuitable for the time being for combat duty. The centers have adopted the same general plan of moving the donors on an assembly line basis, and all employ the open bleeding room arrangement. In this way 2 donors are cared for by 1 nurse, and the entire room can be overseen by a single physician. The appearance of the centers, on an overall appraisal, is essentially the same.

The bleeding bottle is identical with that previously described¹ and has proved satisfactory in this greatly enlarged operation. The actual bleeding technic is the same and follows in detail that originally outlined.³ The safety and efficiency of this technic are borne out in the statistics to be noted.

STANDARDS

As stated originally, the first consideration of the service has always been the protection of the donor.⁴ This has been effected by a carefully controlled basis of operation and uniform technic, and by a rigid adherence to donor standards and requirements. There has been little fundamental change from the donor requirements as originally set forth.³ Minor changes⁵ have been adopted on the basis of experience and mainly cover unusual situations that have come up in dealing with such a large number of donors—approximately 2,000 per working hour throughout the country.

During this calendar year no donors have been accepted who have a history of jaundice in the preceding six months. This stipulation was considered

1. Taylor, E. S.: Blood Procurement for the Army and Navy, J. A. M. A. 117:2123 (Dec. 20) 1941.

2. All statistics are based on thirty centers, as three have until recently produced liquid plasma jointly with the United States Army, and two were opened in January 1944.

3. Taylor, footnotes 1 and 4.

4. Taylor, E. S.: Procurement of Blood for the Armed Forces, J. A. M. A. 120:119 (Sept. 12) 1942.

5. Heiss, M. E., and Taylor, E. S.: Standards for the Protection of Blood Donors, Hospitals 17:31 (Nov.) 1943.

necessary because of the possibility that a virus of "infectious jaundice" might be transmitted through plasma.⁶ Interrogation of 3 million donors appearing for examination during this period indicated that only 325 gave such a history. A compilation of such information is of interest from a public health standpoint in the areas in which the service operates.

COMPLICATIONS

The final test of the efficiency of the standards employed and technics used is the incidence of complications and accidents, coincidental and otherwise, that occur in the donor population. There is a considerable amount of self selection on the part of the donors which in itself militates against many complications. Rather consistently since operations began, from 8 to 8.5 per cent of the donors have been refused because of some variation from the standard requirements. In the selected group which remains, the number of complications and accidents encountered, particularly those of a serious nature, has been far below normal expectancy. There have been no fatalities in or about any of the centers or their temporary mobile unit stations. Of the eight cardiovascular accidents to donors that have occurred in the centers, not one has been fatal.

Although statistical evidence and compiled data are essential in evaluating the safety and protection factors, the donor's own impressions and reactions to the procedure and its effect on his or her well-being are even more significant. In a study over a three month period it was found that 47 per cent of the donors throughout the country were redonors, many of these coming in for their fourth or fifth donation. This implied endorsement by a large number of donors is further documented⁵ in a postcard follow-up on 39,642 donors at four centers, in which a response was obtained from 68.2 per cent. Eighty-one per cent of the group which responded registered no type of complaint. Of the 19 per cent making some comment, only 4 per cent noted anything more than a transient effect, either generally or with reference to the site of the venipuncture. The most informative figure obtained was that only 0.1 per cent of this group had experienced delayed syncope.

The occurrence of delayed syncope is of particular concern when the donor services operate in industrial plants. It is for this reason that no donors who work with or about any type of heavy machinery are bled unless an eight hour interval will elapse before they return to work. In order that this may be carried out, many groups can be reached safely only by having a mobile unit go to the plant when the donors come off shift. Evidence regarding the safety of blood donation in industry has been presented in a general survey by the Industrial Hygiene Foundation.⁷ In a large heavy industry plant, with a population of some 82,000 workers, 39,250 pints of blood has been taken without any record of a serious accident and no evidence of absenteeism or lag in production. The redonor rate in this plant is nearly 40 per cent.

INVESTIGATION

The scope of the project has offered a unique opportunity not only to obtain statistical information but also to evaluate a number of medical problems. Such investigations have in general come under two headings: (1) the donor and (2) the final product, plasma or its by-products.

1. *The Donor.*—(a) Positive Serologic Reactions: The incidence of positive serologic reactions to date has been 0.32 per cent, or 15,197. This low incidence is accounted for in two ways: (1) the high percentage of redonors and (2) the selection on the part of the donors themselves. All instances of positive serologic reactions are followed up, preferably through the donor's own physician, both to fulfil the public health obligation incurred and to perform a service to the donor, who is usually not cognizant of the existence of this condition.

As the number of redonors has increased, a significant number of positive serologic reactions has been reported on donors who already have given blood several times and in whom the previous serologic tests have been negative. This problem is being thoroughly investigated.⁸ It would seem from preliminary results that there are several possible explanations, of which two are of major interest: (1) that repeated donations of blood reactivate an old treated or latent syphilis (provocative reaction); (2) that a change occurs in the globulin or other fraction of the donor's serum after repeated bloodletting which will result in a "false positive" reaction.

(b) Hemoglobin: The Tallqvist method of hemoglobin determination has been standard procedure for all centers. This method was selected on the basis of previous experience with donor groups³ as well as for its speed and simplicity. However, in a project of this size it was felt that the donors should be further safeguarded by checking this type of determination with other methods, e. g. photoelectric cell colorimeter (Evelyn) and the recently developed copper sulfate specific gravity method of Phillips and his collaborators.^{8a} As a result of these studies a modification of the latter method has been adopted for general use in the centers.

(c) A recent article by Master, Marks and Dack⁹ raised some interesting questions with regard to "normal blood pressure," particularly in the age groups over 40. In collaboration with these authors a study is now being made on approximately 25,000 donors to obtain further information on some of these questions.

(d) Syncope: Syncope and the various phenomena associated with it present a continuous and complex problem to the Blood Donor Service. Consistently throughout the country there is some form of "reaction" in 4 to 6 per cent of the donors. Considerable interest has been evinced both in this country and in Great Britain with regard to "fainting in blood donors."¹⁰ but there has been to date no satisfactory evidence presented that has explained this phenomenon in all its variations.

6. Oliphant, J. W.; Gilliam, A. G., and Ianson, C. L.: Jaundice Following Administration of Human Serum, *Pub. Health Rep.* 58: 1233 (Aug. 13) 1943. Findlay, G. M., and Martin, N. H.: Jaundice Following Yellow Fever Immunization: Transmission by Intranasal Instillation, *Lancet* 1: 678 (May 29) 1943. Infective Hepatitis and Jaundice, editorial, *ibid.* 1: 683 (May 29) 1943. Beeson, P. B.: Jaundice Occurring One to Four Months After Transfusion of Blood or Plasma, *J. A. M. A.* 121: 1332 (April 24) 1943. Homologous Serum Jaundice, memorandum prepared by Medical Officers of Ministry of Health, *Lancet* 1: 83 (Jan. 16) 1943. Unexplained Jaundice, editorial, *ibid.* 1: 77 (Jan. 16) 1943. Morgan, H. V., and Williamson, D. A. J.: Jaundice Following Administration of Human Blood Products, *Brit. M. J.* 1: 750 (June 19) 1943.

7. What About Blood Donations by War Workers? Industrial Hygiene Foundation, Pittsburgh, April 1943 (pamphlet).

8. Moore, J. E.; Rein C., and Barnard, R. C.: Personal communication to the authors.

8a. Phillips, R. A.; Van Slyke, D. D.; Dole, V. P.; Emerson, K. Jr.; Hamilton, P. B., and Archibald, R. M.: The Copper Sulfate Method for Measuring Specific Gravities of Whole Blood and Plasma, *Bull. U. S. Army Med. Dept.* 71: 66 83 (Dec.) 1943. (Special condensation of article in full in the Navy Dept. *Bumed. News Letter*, June 25, 1943.)

9. Master, A. M.; Marks, H. H., and Dack, S.: Hypertension in People Over Forty, *J. A. M. A.* 121: 1251 (April 17) 1943.

10. Poles, F. C., and Boycott, M.: Study of Syncope Among Blood Donors, *Lancet* 2: 531 (Nov. 7) 1942. Greenburg, C. L.: Incidence of "Fainting" in 5,897 Unselected Blood Donors, *Brit. M. J.* 1: 253 (Feb. 21) 1942. Brown, H., and MacCormack, P.: An Analysis of Vascular Phenomena (Faints) Occurring in Blood Donors, *ibid.* 1: 1 (Jan. 3) 1943.

There is a critical amount of blood which can be withdrawn from the healthy adult.¹¹ After approximately 1,000 cc. of blood has been taken, syncope and other striking vasomotor changes will occur in most persons. However, this does not explain either the number of syncopes that occur when no more than 200 cc. has been withdrawn or those that occur when the finger is pricked to obtain blood for a hemoglobin determination. In an attempt to appraise this problem, a questionnaire survey was undertaken on 5,030 donors, 2,292 of whom had some type of vasomotor reaction; the remaining 2,738 were utilized as controls. An effort was made to obtain information on all the possible factors that are thought to be conducive to syncope, either directly or indirectly. The findings were tabulated on punch cards, and the following general impressions were gathered:

Females react more frequently than males by a ratio of 1.5:1. Young persons, particularly females under 21, are apparently more susceptible than those in later adult life. These reactions, however, are mild and transient, whereas the more severe reactions occur in the upper age brackets. Both males and females in the so-called white collar class show a higher proportion of reactions than those in the more physically strenuous occupational groups. This is in general agreement with British findings.¹⁰

The incidence of reactions is four times greater among first donors than among redonors. This is to be expected, as first time donors are not solicited to return if they have had a reaction at the time of their first donation. A history of fainting invariably predisposes to syncope. Donors are often loath to admit to this on routine interrogation, and such a history can often be elicited only after the donor has experienced syncope.

Apprehension on the part of the donor seems to be one of the most important factors in predisposing the otherwise acceptable donor to syncope. The question of the relationship of this factor to certain psychosomatic features of the donor is difficult to evaluate but offers a most promising field of investigation. It is hoped that this preliminary study will serve as a basis for a detailed investigation of the more suggestive causative factors.

There are two forms of reactions that are encountered from time to time which are of particular interest:

1. A small number of donors develop tetany with carpopedal spasm and positive Chvostek and Trousseau's signs. It has been suggested that this may be due to hyperventilation and/or a calcium-phosphorus imbalance.¹² No studies have been done on this group, but in a number of instances hyperventilation has been observed prior to the onset of tetany. Empirically, some of these donors have been treated with carbon dioxide and others with calcium lactate intravenously. Response to treatment has been very striking in some cases; in other cases recovery can hardly have been attributed to the therapy.

2. The other, and equally disturbing, group consists of those donors who have convulsions. This phenomenon, which occurs in less than 1 per thousand donors, has been encountered in almost every step of the procedure. A number of these donors, on further interrogation, have admitted to previous "fits" or con-

vulsive states occurring usually many years before, with no history of such phenomena in the interim.

In order to evaluate this group further, Walter¹³ of the Boston center and Moore¹⁴ of the St. Louis center did encephalograms on a number of these donors. In the 8 tested by Moore, no significant data or information was obtained. In four of the series of 28 investigated by Walter, the encephalograms suggested the typical pattern of subclinical epilepsy, but the findings were not conclusive.

2. *Plasma and Its By-Products.*—(a) The red cell residues remaining after the withdrawal of the plasma-citrate mixture are now being more extensively used.¹⁵ Not only are these residues distributed for use in Army and Navy hospitals, but they are also being offered without cost for clinical investigation to some civilian hospitals that are in proximity to the various processing laboratories.

A considerable number of red cells have been diverted to the production of human peptone for use as culture mediums.¹⁶

Use of red cell residues, both in the liquid and in the dried state, to promote the healing of indolent wounds and ulcers has been reported.¹⁷ Circumstances have prevented any study by this service of the use of the red cells in this manner.

(b) The question has been raised as to whether or not pooled dried plasma can cause reactions because of the agglutinin titer of the pools.¹⁸ To evaluate this question, agglutinin titers have been done on several thousand pilot samples from pools of plasma which have been prepared for the Army and Navy. The samples were chosen at random at each of the processing laboratories. The results of these studies are reported in a separate paper.¹⁹ A standard method of agglutinin titration has been developed which may enable the various workers in this field to make their reports regarding titration comparative.

RESULTS

From Feb. 3, 1941 to Nov. 1, 1943 prospective donors have offered to give blood 5,259,115 times; 4,162,483 of these donors offered to donate within the past twelve months. This represents, on the basis of the number of redonors, approximately 2,500,000 individuals. From this donor group 4,762,308 pints of blood has been obtained; 418,080 donors have been either permanently or provisionally (upper respiratory infection and so on) rejected, a rate of 8 per cent. This rejection rate is uniform throughout the country and varies little with the season of the year. In 78,727, or 1.6 per cent. of the donors accepted, the bleeding team has been unable to obtain blood. It should be noted that no accepted donor is turned away without at least one attempt to obtain blood, no matter how unsuitable the veins appear to be.

Taking into consideration the average hematocrit reading and the 50 cc. of 4 per cent sodium citrate con-

13. Walter, C.: Personal communication to the authors.

14. Moore, C.: Personal communication to the authors.

15. Taylor, E. S.; Thalheimer, W., and Cooksey, W. B.: A Red Cell Transfusion Service, to be published.

16. Parke-Davis Laboratories: Personal communication to the authors.

17. Moorehead, J. J., and Unger, L. J.: Human Red Cell Concentrate for Surgical Dressings, *Am. J. Surg.* **50**: 104 (Jan.) 1943. Seldon, T. H., and Young, H. H.: Use of Dried Red Blood Cells in Wound Healing, *Proc. Staff Meet., Mayo Clin.* **18**: 385-389 (Oct. 20) 1943.

18. Polayes, S. H., and Squillace, J. A.: Near Fatal Reaction to Transfusion with Dried Human Plasma Solution, *J. A. M. A.* **118**: 1050 (March 28) 1942. Levine, M., and State, D.: A and B Substances as Cause of Reaction Following Human Plasma Transfusions, *ibid.* **120**: 275 (Sept. 19) 1942. Thalheimer, W.: Intravenous Injection of Pooled Normal Plasma or Serum, *ibid.* **120**: 1263 (Dec. 19) 1942.

19. Lozner, E. L., and Newhouser, L.: To be published. Thalheimer, W.: Personal communication to the authors.

11. Ebert, R. V.; Stead, E. A., Jr., and Gibson, J. G. II: Response of Normal Subjects to Acute Blood Loss, *Arch. Int. Med.* **68**: 578 (Sept.) 1941.

12. Frazer, W. F., and Fawcweather, F. S.: Tetany in Blood Donors, *Brit. M. J.* **1**: 759 (June 20) 1942.

tained in the bottle, most of which is drawn off in the supernatant plasma, it would be ideal to obtain one finished unit of plasma (300 cc.)²⁰ from each full bleeding (550 cc.). Considering losses from all sources—breakage, positive serologic reactions, hemolyzed and clotted samples, material denatured because of breakdown in the drying process—the ratio of bleedings per finished package of plasma since the beginning of the project is 1.079:1. Total losses from contamination are 1.12 per cent; the loss from mechanical defects, i. e. breakage and processing breakdowns, 1.35 per cent; positive serologic reactions, 0.32 per cent. This makes a total loss of 2.77 per cent, or a ratio of 1.03:1. However, this figure presupposes that every bottle delivered to the laboratory contains 550 cc. and leaves no provision for sterility samples and filling losses, which are accounted for in the final ratio. It may be stated that the occasional outbreaks of contamination which occur can usually be attributed to some oversight in the sterilization of the donor sets, pooling bottles or filling apparatus at the laboratory.

Except for the breakage of bottles as they arrive with whole blood, the aforementioned "losses" are actually losses in only a relative sense. A large amount of the contaminated material contains only a relatively small number of organisms and may be salvaged for use in the albumin program if the organisms are not pyrogen formers. Other material is used for moisture samples and the like, so that in reality only the smallest fraction of the amount of blood donated is lost.

Of the blood collected, approximately 4,000,000 bottles have been used in the production of dried plasma for the armed services. Approximately 788,000 bleedings have been employed in the human serum albumin program. Delivery of the finished product parallels the rate of receipt of the whole blood.

In the latter months of 1942, frozen and dried plasma derived from nearly 100,000 bleedings obtained by the Blood Donor Service was made available to the U. S. Public Health Service to be used by the Emergency Medical Service of the Office of Civilian Defense in the event of a civilian disaster caused by enemy action. Blood for such use is now collected under the auspices of the Emergency Medical Service of the Office of Civilian Defense through its grantee hospitals. However, in the event of a catastrophe, the chief of the local Emergency Medical Service may call on the technical supervisor of an American Red Cross Blood Donor center to provide whole blood as such or as a source of replacement for Office of Civilian Defense supplies of plasma that may have been utilized for a natural disaster rather than one caused by enemy action. This has been found to be a useful and practical supplementary function of the Blood Donor Service on several occasions.

About 6,000 units of dried plasma has also been released by the Surgeon General of the Army to the American Red Cross and is held by the Disaster Relief Service in various parts of the country. This constitutes a source of plasma to be used to meet the needs of the civilian population that may occur because of a catastrophe not related to the war.

SUMMARY

1. The American Red Cross Blood Donor Service, as the sole agency for the collection of blood to be processed into plasma and albumin for the armed forces,

20. The standard Army-Navy plasma package now being supplied contains twice the amount of plasma-citrate mixture that it formerly did, i. e. 600 cc.

procured 4,762,308²¹ pints of blood up to Nov. 1, 1943. At present donors are being accepted at the rate of 110,000 per week.

2. The Blood Donor Service, through its 35 centers and their 60 mobile units, offers to 45 per cent of the total population of this country the opportunity to donate blood.

3. The work of the Blood Donor Service is carried out by 129 doctors and 911 nurses, with the additional help of a large number of Red Cross volunteers.

4. The donor requirements and the method of procedure are rigidly standardized throughout the service.

5. The scope of this project has provided an opportunity for various studies and the investigations which have been outlined.

6. Because of the employment of full time experienced personnel and standardized methods of procedure, operational losses have been minimal.

ISCHEMIC MUSCLE NECROSIS

CRUSHING INJURY, TRAUMATIC EDEMA, THE CRUSH SYNDROME, TRAUMATIC ANURIA, COMPRESSION SYNDROME: A TYPE OF INJURY SEEN IN AIR RAID CASUALTIES FOLLOWING BURIAL BENEATH DÉBRIS

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When in 1940 the air blitz on London started, we expected to see patients with "shock," a mysterious condition with as many definitions as there are writers on it, something that could be produced by natural processes such as burning, bleeding and bruising, as well as by such unnatural practices as injecting histamine, ground up muscle tissue and snake venom, and roentgen irradiation. The patients that we saw were suffering from the consequences of aerial bombardment. Most of them were only frightened—pale, rather cold, often described as "shocked." But the blood pressure was often rather above normal, and all they needed was rest and reassurance. Others we saw had severe lacerations; their pallor, coldness and sweating were accompanied by a low blood pressure and by a gradual hemodilution such as could be explained by the severe hemorrhage they had had. This surely was nothing mysterious but a reaction to blood loss, and when we remedied this by transfusion all went well. And then at last, rather later than the other casualties that had been admitted, some patients arrived who appeared to merit this label. With signs neither of external nor of internal hemorrhage these patients were pale, cold and sweating: the radial pulse was thready and weak, their blood pressure was low, and their blood showed hemoglobin concentrations of 140 and 160 per cent Haldane (19-22 Gm. of hemoglobin per hundred cubic centimeters). Was this not the same "shock" that had been seen in World War I when Cannon and his associates¹ described cases with hemoconcentration? Since then, although Moon² avers that hemoconcentra-

21. As of March 1, 1944 the total bleedings procured at the centers amount to approximately 6,400,000.

Contributed by request.

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1. Cannon, W. B.: Traumatic Shock, New York and London, D. Appleton & Co., 1923.

2. Moon, V. H.: Shock, London, Henry Kimpton, 1942.

tion occurs in "shock," few other observers have found it except after severe burns, after intestinal injuries or in dehydration. Now all these patients gave a history of burial beneath debris for several hours, often with compression of a limb by fallen masonry: the affected limb was swollen—perhaps, we conjectured, because of plasma leakage. Whether this was so or not, it appeared that plasma had been lost from the blood stream, and so therefore we replaced it and with excellent results. The blood pressure rose, the hemoglobin level came down and the patient seemed on the highway to recovery. In the rush of work the first urines were often discarded without testing, but later what were thought to be red cells were seen, suggesting a genito-urinary injury; some of these patients developed oliguria and died in uremia with pathologic changes in the kidneys. With this lead, later cases were studied more carefully and a clinical entity emerged of which "shock" was only a facet. This was a specific response to a specific type of trauma: the clinical syndrome called "shock" is only a part of many diverse processes set in motion by various noxious agencies, conspicuous because common to all. The abstraction of certain common features from all types of trauma and the labeling of these as "shock," the conception of "shock" as a real entity with a cause and a mechanism, with as many books and papers written about it as were written about that other fabulous concept the unicorn in more ancient times, seemed to us to have done more harm than good. What was needed was a careful study of specific responses to trauma. This the Medical Research Council set out to do for "crushing injury." Cases of this nature were notified through the Emergency Medical Service by observers in all parts of the country, and the M. R. C. has now particulars, sometimes scanty, sometimes more detailed, of about 100 cases. While most of this material is as yet unpublished, protocols of the earlier cases may be seen by reference to the original publications.³ The following brief account has been compiled from material collected by the M. R. C. and its observers in Britain to familiarize readers in the United States with the salient features of the condition and with the present state of knowledge in this country regarding pathogenesis and treatment.

PREVIOUS LITERATURE

Despite the occasional occurrence of this type of injury in civil accidents apart from aerial bombardment, as after mining accidents (McClelland⁴), traffic acci-

dents (Bywaters, Belsey and others⁵), industrial accidents (Glen⁶) and mob stampedes (unpublished data), the condition seems heretofore unrecognized in English speaking countries. In Germany, however, the condition was recognized during World War I. Frankenthal⁷ in 1916 was the first to describe muscle necrosis in soldiers buried as a result of mine explosions, and reference is made to a probably similar injury recorded by von Colmers⁸ in 1910, in civilians buried during the Messina earthquake. This aspect is dealt with in the official Handbook of Military Surgery (Kayser⁹). Anatomic changes in the kidney were first mentioned by Hackradt in 1917 and Bredauer in 1920, whose findings are summarized, with those of other German authors, by Minami.¹⁰ It appears probable that, as we failed to recognize the condition in World War I because of the distance from the front line to the base hospital with its better equipped facilities for investigation, so we have failed to recognize the similar condition in traffic accident cases owing to the exclusive attention directed to the surgical aspects of these severe injuries. The only reference to these traffic accident cases that we have been able to find is the paper of Husfeldt and Bjering¹¹ from Oslo. In this war many air raid cases still pass unrecognized, particularly those with less severe degrees of damage, frequently diagnosed as "foot drop." However, publication of the air raid cases has stimulated the recognition of uremia following civilian accidents in this country, and it is to be expected that similar cases will be found in other automobile using countries. In large night raids on urban areas, crushing injury may account for about 5 per cent of all casualties.

CONDITION ON ADMISSION

Any patient admitted from a bombed area two hours or more after the incident must be questioned carefully as to whether he was buried or pinned down, and for how long: if there was compression for two to three hours or more, the patient will say that the limb was very painful for a short time and then went numb. On examination—and some patients are unable to give any adequate history—as soon as the grime and plaster are cleared away, patches of erythematous skin are seen delineating accurately the area of compression. The whole body must be examined: while in most cases the limbs are involved, in a few, areas of pressure on the trunk or neck have been responsible for symptoms. In fat people particularly the deep swelling which follows is very liable to be missed if the trunk is affected. The erythematous areas may progress to blister formation, which have several times been mistaken for burns. Soon after release from the compression the affected limb becomes swollen and hard: there is no subcutaneous, pitting edema, as the fluid is almost entirely beneath the deep fascia. The affected muscle is insensitive and paralyzed: superficial skin sensation is lost, usually over a rather patchy distribution, but sometimes corresponding to nerve trunk lesions. Later the tenseness passes off, palpation elicits a peculiar "doughy" sensation and pitting edema can appear.

3. Protocols of the earlier cases:
Bratton, A. B.: Anuria with Casts Not Associated with Transfusion, *Lancet* **1**: 345 (March 15) 1941.
Beall, D.; Bywaters, E. G. L.; Belsey, R. H. R., and Miles, J. A. R.: A Case of Crush Injury with Renal Failure, *Brit. M. J.* **1**: 432 (March 22) 1941.
Mayon-White, R., and Solandt, O. M.: A Case of Limb Compression Ending Fatally in Uremia, *ibid.* **1**: 434 (March 22) 1941.
Medical Research Council Subcommittee on Traumatic Edema: Further Cases of Crush Injury, *ibid.* **1**: 449 (March 22) 1941.
Patey, D. H., and Robertson, J. D.: Compression Treatment of Crush Injuries of Limbs, *Lancet* **1**: 780 (June 21) 1941.
Henderson, R. G.: Recovery from Uremia Following Crush Injury, *Brit. M. J.* **2**: 197 (Aug. 9) 1941.
Blackburn, Guy, and Kay, W. W.: Crush Injury with Renal Failure and Recovery, *ibid.* **2**: 475 (Oct. 4) 1941.
Maitland, A. I. L.: A Case of Crush Injury with Recovery, *Lancet* **2**: 446 (Oct. 18) 1941.
Dunn, J. S.; Gillespie, Marjorie, and Niven, J. S. F.: Renal Lesions in Two Cases of Crush Syndrome, *ibid.* **2**: 549 (Nov. 8) 1941.
Mori-on, J. E.: Obstruction of Renal Tubules in Myelomatosis and in Crush Injuries, *J. Path. & Bact.* **53**: 403 (Nov.) 1941.
Bradley, E. J.: Crush Injury with Renal Failure: Recovery, *Brit. M. J.* **1**: 294 (Feb. 28) 1942.
Robertson, H. R., and Mathews, W. H.: Crush Syndrome, *Canad. M. A. J.* **46**: 116 (Feb.) 1942; correction **46**: 375 (April) 1942.
Bywaters and Beall;² Longland and Murray.²²
4. McClelland, J. C.: Anuria: Report of Three Types of Cases, *Canad. M. A. J.* **45**: 332 (Oct.) 1941.

5. Bywaters, E. G. L.; Belsey, R. H. R. and others: Discussion on the Effects on the Kidney of Trauma to Parts Other than the Urinary Tract, Including Crush Syndrome, *Proc. Roy. Soc. Med.* **35**: 321 (March) 1942.
6. Glen, A. M.: Temporary Vascular Occlusion Ending Fatally in Uremia, *Brit. M. J.* **2**: 875 (Dec. 20) 1941.
7. Frankenthal, L.: *Virchows Arch. f. Path. Anat.* **222**: 332, 1916.
8. von Colmers: *Arch. f. klin. Chir.* **90**: 701, 1909.
9. Kayser, F. F. O., in von Schjerning's *Handbuch der ärztlichen Erfahrungen im Weltkrieg*, Leipzig, Chirurgie **1**: 36, 1922.
10. Minami, S.: *Virchows Arch. f. Path. Anat.* **245**: 247, 1923.
11. Husfeldt, E., and Bjering, T.: Renal Lesion from Traumatic Shock, *Acta. med. Scandinav.* **91**: 279, 1937.

OLIGEMIC HYPOTENSION

The general condition of the patient may at first give rise to no concern: the blood pressure is normal or slightly raised. Within a few hours, however, in patients with extensive lesions (one leg and thigh, or more), the damaged area swells and the blood volume is correspondingly reduced by plasma leakage through the damaged capillaries into the extravascular tissue spaces of the injured part. The patient becomes pale and cold; beads of sweat stand out on his forehead, and the pulse becomes thin. The blood pressure is maintained at its previous level by arteriolar vasoconstriction, until a moment arrives when this process can no longer compensate for the decreasing blood volume (due to continued plasma loss). At this juncture, which may be precipitated either by warming the patient under an electric bulb cradle or by anesthesia preliminary to operation, the blood pressure will fall to levels of 60-80 mm. systolic or lower, and the blood will be found maximally concentrated with a hemoglobin level of 140-160 per cent Haldane (19-22 Gm. per hundred cubic centimeters) and a raised plasma protein concentration. If the patient has bled, as from a scalp wound, this hemoconcentration will be masked by a parallel hemodilution and the net change may be very small (chart 1). Oligemia with hemoglobin 160 per cent Haldane corresponds to a plasma volume of 1 liter: it must be treated—and preferably before the hypotensive phase—by plasma or serum transfusion. Often more than the lost 2 liters may have to be used, as the injected fluid merely leaks out. Restraint of this continued local loss may prove to be a useful measure, as by the bandages suggested by Patey and Robertson¹² or by the plaster casts used by Trueta. There is some experimental evidence (Duncan and Blalock,¹³ Swingle¹⁴) that such measures will diminish the severity of "shock" in untreated dogs with legs crushed in a spring clamp and in other types of local shock-producing damage.¹⁵ Whether or not bandaging or plaster will decrease or increase the uptake of the hypothetical nephrotoxin from the damaged area in the animal is uncertain from the data so far published. In human cases a plaster, put on before maximal swelling, may later cause obliteration of the arterial pulse and have to be removed if further dam-

age is to be avoided.¹⁶ It seems probable that after some twenty-four hours plasma leakage is halted, perhaps by recovery of normal capillary permeability aided by increased tissue tension and reduction of extravascular osmotic pressure due to metabolites. The aim, therefore, of plasma transfusion is to maintain blood pressure at a normal level for the first day, and for this purpose a continuous infusion is necessary. If more than 2 liters is necessary, whole blood should be used, as the hemoglobin often tends to fall in these severe cases, leaving a residual anemia. The mechanism of this is as yet unknown: diapedesis and thrombosis in the damaged area would seem to play only a small part.

THE LOCAL CONDITION

In some cases as the swelling in the limb increased, either spontaneously or following intravenous fluid, the distal pulse decreased and the foot or hand became

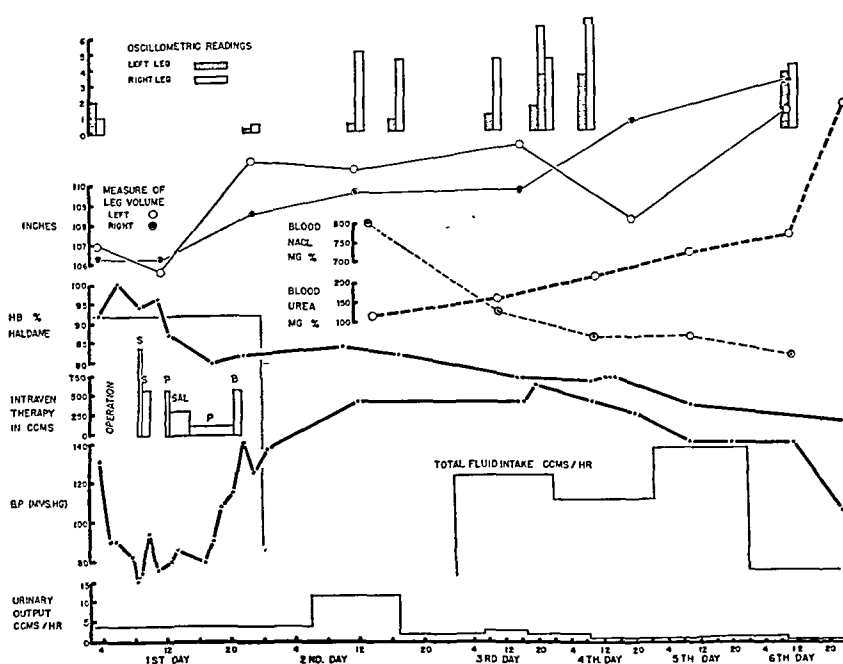


Chart 1.—Clinical course of a crushing injury case (Bywaters and Beall²⁷) buried six hours. Note from above down: 1. Return of circulation to legs as measured by oscillometer readings. 2. Increase in leg volume measured by spiral bandage. 3. Hemoconcentration and later hemodilution shown by hemoglobin level. 4. Blood pressure fall and restoration after transfusion. 5. Decreased urine output with rising blood urea. Urine contained pigment granules and casts and failed to concentrate urea above 670 mg. per hundred cubic centimeters. Necropsy showed blanching and necrosis of muscle in both legs and a typical swollen kidney.

pale and cold. Oscillometric readings confirmed the diagnosis of ischemia. In some cases the blood flow returned spontaneously and then the pulse was often greater than in the opposite uninjured member. In other cases the surgeon, thinking that perhaps the swelling of the muscle in the deep fascial compartment was compressing the artery, made an incision along the course of the artery: much serous fluid seeped from the wound and pale necrotic muscle bulged out. Obviously there had been a great increase of tension locally, which had perhaps obliterated the venous return. Following this procedure, in some cases a pulse was restored distally: in others the artery was found to be in spasm and periarterial stripping was thought necessary. It seems probable that arterial spasm alone without much increase of subfascial tension may sometimes be responsible for peripheral ischemia, particularly if hemorrhage into the adventitial sheath has occurred.

12. Patey, D. H., and Robertson, J. D.: First Aid Prophylactic Treatment of the Compression Syndrome ("Crush Syndrome"), *Brit. M. J.* 2: 212 (Aug. 22) 1942.

13. Duncan, G. W., and Blalock, Alfred: Shock Produced by Crush Injury: Effects of Administration of Plasma and Local Application of Cold, *Arch. Surgery* 45: 183 (Aug.) 1942; Effects of Application of Tourniquet on the General Response to Gross Trauma to an Extremity, *Surgery* 13: 401 (March) 1943. Uniform Production of Experimental Shock by Crush Injury.²⁶

14. Swingle, W. W.; Remington, J. W.; Drill, V. A., and Kleinberg, W.: An Experimental Study of the Tourniquet as a Method for Inducing Circulatory Failure in the Dog, *Am. J. Physiol.* 138: 156 (Dec.) 1942.

15. Katz, L. M.; Shleser, I. H.; Asher, R., and Perlow, Samuel: Prevention of Experimental Shock Following Venous Occlusion in Dog by Application of a Rigid Cast, *Am. J. Physiol.* 137: 589 (Oct.) 1942.

16. Belsey: Personal communication to the author.

RENAL FUNCTION

The first urine passed after admission is usually highly acid (p_H as low as 4.6) and shows a brown sediment of acid hematin granules. These are frequently thought to be erythrocytes, a mistake that was made in our first cases. The supernatant urine may be normal in color, and the brown deposit is then sometimes overlooked by inexperienced staff. More usually, however, the supernatant urine is of a smoky color; only in urines with a p_H approaching neutrality is the urine red, and in such urine there is usually little or no sediment. Rarely the first urine obtained is normal: this is seen in very shocked patients and represents urine excreted into the bladder before the burial. With systolic pressures below 70-80 mm. of mercury, little urine is excreted. The pigment in the urine often shows a broad band in the red, signifying a met- compound, as well as two bands in the yellow-green portion closely resembling those of oxyhemoglobin. But, as will be detailed later, the pigment is not hemoglobin. It is always necessary to centrifuge such bloody, benzidine positive urine and to examine the deposit microscopically. If red cells be found, as may happen with rupture of a kidney, it is a mistake to assume that pigment in the supernatant is always derived therefrom. Lysis of such erythrocytes occurs usually only in infected urine. Hemoglobinuria, however, is said to occur with renal infarcts.¹⁷ Within one or two days the excretion of pigment ceases: casts become more numerous, at first consisting mainly of pigment granules, aggregated to form hollow tubes. Later the casts become rather stringy, and toward the end of the first week the pigment core is covered by a layer of desquamated epithelial cells. Sometimes these late casts appear to be entirely cellular. The amount of urine excreted decreases progressively in severe cases until the end of the first week, quantities such as 25-50 cc. in twenty-four hours being passed. Its composition tends to resemble glomerular filtrate in that the concentration of urea is low—often below 1 Gm. per hundred cubic centimeters with a blood level of over 300 mg. per hundred cubic centimeters—and the chloride content tends to be high despite a blood concentration below the normal level. Reducing substances are occasionally found in small amounts. Thus there is evidence of severe tubular dysfunction, although the total output is low rather than high. This we¹⁸ have thought to be due perhaps in some part to mechanical blockage of the tubules but mostly to leakage of filtrate back into the blood stream through damaged tubules. Other substances present in abnormal quantities in the urine are potassium and creatine. Both these substances are derived from damaged muscle, and both occur in largest quantity in the first specimens of urine passed after release.

GENERAL CONDITION

As a result of this excretory impairment, nitrogen retention occurs; the patient becomes rather drowsy, occasionally anxious and apprehensive. Vomiting may occur, another factor tending to reduce the blood chloride level. The serum carbon dioxide combining power may be low soon after release from compression, as

the result probably of the liberation of lactic and other acids from the damaged muscle, but rises thereafter: in cases with excretory impairment the carbon dioxide combining power may show a late tendency, to fall, as the result of retention of acid. Some patients have undergone laparotomy for abdominal pain without anything definite being found: sometimes pain in the loins is complained of, perhaps because of tension of the renal capsule. The blood pressure progressively rises to levels between 150 and 200 mm. of mercury and is maintained until death or the recovery diuresis ensues. It seems possible that this may be directly related to renal ischemia.

RECOVERY

About one third of the cases ordinarily recognized go on to recovery. These show on the average a smaller volume of necrotic muscle than the fatal cases—one lower leg or part of the lower thigh or one arm involved. The mildest type has no hypotensive phase, although some hemoconcentration can usually be found. The urinary output may remain good throughout, or it may be low for the first day with rapidly increasing volume and urea concentration thereafter: the blood urea level therefore rises only to a limited extent, to 60 or 100 mg. per hundred cubic centimeters on the second day, and then falls to normal. They are left with unimpaired renal function and some slight weakness in the affected muscle. A more severe type, which none the less ultimately goes on to recovery, is not infrequently seen: in these there is oliguria and severely decreased urinary urea concentration, with a blood urea as high as 400-500 mg. per hundred cubic centimeters. At the critical period on the sixth or seventh day a diuresis occurs and is maintained for several days until all the retained nitrogen is excreted. At the same time the raised blood pressure begins to fall to normal. Renal function, however, although it appears to recover completely, does so slowly: and the concentration of urinary urea will rise by about 50 mg. per hundred cubic centimeters daily in the third week. It may take five months for the urea clearance to reach normal figures.⁵ Damage to the compressed muscle is never completely repaired if complete ischemic necrosis has occurred. The infarct is replaced by fibrous tissue; calcification sometimes occurs, as in the only English case from the last war that I have been able to find, recorded recently by Albert and Mitchell.¹⁹ With lesser degrees of damage, regeneration of muscle fibers from the sarcolemmal sheath occurs and muscle strength gradually improves. Fibrosis may result in a Volkmann's contracture: it is important, therefore, to splint the limb correctly.

TERMINAL COURSE

Two thirds of the patients die toward the end of the first week, the majority on the sixth day. Death occurs very suddenly and may be preceded by cardiac irregularity. If electrocardiographic tracings are taken, changes similar to those seen in human potassium poisoning are seen—increased T waves and widened QRS complexes. These are associated with an increase of the potassium level in the serum to more than twice the normal upper level of 20 mg. per hundred cubic centimeters. The raised serum potassium concentration

17. Libman, Emanuel, and Fishberg, A. M.: Unilateral Hemoglobinuria Due to Infarct, *Ann. Int. Med.* **11**: 1344 (Jan.) 1938.

18. Bywaters, E. G. L., and Dible, J. H.: The Renal Lesion in Traumatic Anuria, *J. Path. & Bact.* **54**: 111 (Jan.) 1942.

19. Albert, Moss, and Mitchell, W. R. D.: Volkmann's Ischemia of the Leg, *Lancet* **1**: 519 (April 24) 1943.

in crushing injury is due to two processes: first, the muscle potassium diffuses out into the blood stream, its concentration falling from 300 to 70 mg. per hundred cubic centimeters or lower, both in man and in animals; secondly, very little of this is excreted owing to renal failure, and thus it accumulates in the body. The condition is analogous to the toxic condition induced by feeding potassium to dogs with ligated ureters,²⁰ except that the potassium is endogenous. If insulin and dextrose are given to a patient with raised blood potassium and similar electrocardiographic changes due to obstructive anuria, the blood potassium level will fall and the T waves decrease in height, owing to storage of potassium.²¹ This therapeutic lowering of potassium level may be found useful in cases in which there are indications of improving renal function, such as an increasing output and urea concentration (chart 2). It is important, therefore, that these patients should not be given meat or drugs containing potassium salts.

PATHOLOGIC CHANGE IN THE KIDNEYS

The pathologic changes in the kidneys of 22 patients have already been fully described (Bywaters and Dible¹⁸) and little new has emerged since then regarding structural damage. Briefly the kidneys resemble those of renal failure following intravascular hemolysis, being swollen and tense, with foci of tubular necrosis most pronounced in the boundary zone (distal convoluted tubule) and showing pigmented casts from the distal convoluted tubule downward. Many of these patients had had group O blood transfusions, but they showed no incompatibility, no rigor or post-transfusion backache, no jaundice or abnormal plasma bilirubin concentration (with the exception of a single case described by Longland and Murray²²) and neither hemoglobin-like pigment nor methemoglobin in their serum.

Some patients had had neither blood nor serum and yet they showed the full picture. We therefore dismissed the possibility of this being due to intravascular hemolysis and found on examining the urine more closely that the pigment differed from hemoglobin in several important respects.²³ Its α band had a wavelength of 5,810 angstroms as compared with hemoglobin at 5,780 angstroms; the CO-span, that is, the shift of the band on converting to carboxyhemoglobin, was only 30 angstroms instead of the 60 angstroms shown by hemoglobin. The pigment, in fact was myohemoglobin, the intracellular hem-compound responsible for oxygen storage in muscle. Its identification furnished us with a reason for the curious phenomenon of "hemoglobin" appearing in the urine without any being detectable in the blood plasma. Since it has a molecular weight of 16,700 compared with 68,000 for hemoglobin, it filters out through the glomerulus as rapidly as it is taken up from the muscles; it does not accumulate in the blood stream because by virtue of its low threshold, 20 mg. per hundred cubic centimeters (compare with 100 mg. per hundred cubic centimeters for hemoglobin),

its renal clearance is twenty-five times as great as that of hemoglobin.²⁴ Perhaps the best known condition in which this pigment is excreted is paralytic equine myohemoglobinuria: after a period of rest and rich feeding, sudden exercise of the horse produces acute stiffness, swelling and paralysis of muscles, with hemoconcentration, a thready pulse, acidosis and the passage of muscle pigment in the urine. In those animals that die, autopsy shows pale necrotic muscles resembling fish flesh, and an acute nephrosis.²⁵ Seven cases have occurred in man, and in what was thought to be the eighth case degenerative changes were seen in the muscles, and the kidneys were indistinguishable from those of the crush syndrome.²⁶

PATHOLOGIC CHANGES IN THE MUSCLES

The muscles that have been compressed are found at autopsy or operation to be swollen, sometimes pallid, sometimes mottled with hemorrhage. The fibers are friable and opaque. There is a sharp demarcation between living and dead muscle, corresponding with the areas of pressure necrosis in the skin. Histologi-

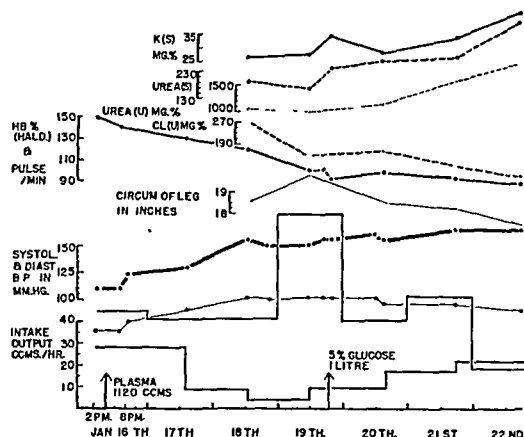


Chart 2—Course in a man aged 20 buried ten hours (Beall, Bywaters, Belsey and Miles²⁷). Note from above down: 1. Biochemical findings (rising serum potassium and urea, rising urinary urea and falling urinary chloride concentration). 2. Hemoconcentration and pulse. 3. Swelling of left leg. 4. Hypertension; no period of hypotension. 5. Intake well maintained. 6. Urinary output recovering. Death occurred on the seventh day with typical postmortem findings.

cally the fibers show loss of nuclei and retention of cross striation, with vacuolation and calcification in the boundary zone. Occasionally, however, cases apparently of crush syndrome are seen which show no gross alteration in muscle: in 1 instance (case 1, Bywaters and Beall²⁷) in which microscopic examination revealed occasional necrotic fibers in macroscopically normal muscle, we think this patchy necrosis was due to the ischemia of arterial spasm. During life the patient showed several features differentiating the case from the general run of "crush injury"—little hemoconcentration and yet a large decrease in blood pressure, two urine specimens free from protein, and a pulseless leg without progressive swelling. Autopsy revealed hemorrhage in the sheath of the popliteal artery, a lesion known to produce

20 Hoff, H. E.; Smith, P. K., and Winkler, A. W. The Cause of Death in Experimental Anuria, *J. Clin. Investigation* 20: 607 (Nov.) 1941.

21 Unpublished data.

22 Longland, C. J., and Murray, J. A Case of Recovery from Crush Syndrome, *Lancet* 2: 158 (Aug. 9) 1941.

23 Bywaters, E. G. L.; Delory, G. E., Rimmington, Claude, and Smiles, John: Myohemoglobin in the Urine of Air Raid Casualties with Crushing Injury, *Biochem. J.* 35: 1164 (Nov.) 1941.

24 Yuile, C. L., and Clark, W. F.: Myohemoglobinuria: Study of Renal Clearance of Myohemoglobin in Dogs, *J. Exper. Med.* 74: 197 (Sept.) 1941.

25 Carlstrom, B.: Skandinav. Arch. f. Physiol. 61: 161 (March) 1931.

26 Bywaters, E. G. L., and Dible, J. H.: Acute Paralytic Myohemoglobinuria in Man, *J. Path. & Bact.* 55: 7 (Jan.) 1943.

27 Bywaters, E. G. L., and Beall, D.: Crush Injuries with Impairment of Renal Function, *Brit. M. J.* 1: 427 (March 22) 1941.

violent spasm. In other cases the usual postmortem examination is not extensive enough to reveal muscle necrosis. The importance of finding myohemoglobinuria and creatinuria, therefore, is that these are indirect evidence of severe muscle damage; in all cases showing these substances in the urine a full muscle examination should be made. Cases do occur, however, in which the full crush syndrome picture develops and yet no prolonged pressure has occurred.⁵ These are patients, involved often in automobile accidents, with rupture of a main limb artery, with arterial spasm or thrombosis or with obstruction of the main artery by, for instance, a fractured pubic ramus. Each of these causes ischemia of muscle, which, if it lasts for more than several hours, produces muscle necrosis. This necrosis is hastened by the therapeutic warming which such cold pulseless limbs have so often suffered in the past. As soon as the collateral circulation returns to the part, the products of muscle autolysis are swept out into the general circulation and renal failure develops. It seems possible that this condition might occur with embolism of a main limb vessel or after a tourniquet has by mistake been left on for more than three hours, but I do not know of any such recorded cases. Another mechanism thought to account for the necrosis of complete muscles usually those deep set in a tight fascial compartment such as the posterior tibial, is that of obliteration of blood supply by increase of subfascial tension.²⁸

In summary, therefore, the essential lesion of crushing injury is muscle necrosis: this may be due to the ischemia of direct compression or it may be due to ischemia from interference with the main arterial supply by sudden spasm, thrombosis, rupture or obstruction.

PATHOGENESIS

In what way, then, does muscle necrosis produce renal damage? It is not due to the plasma leakage and low blood pressure alone because, in patients with prolonged shock due to lacerations and hemorrhage with a blood pressure below 90 for many hours, we have found no renal damage beyond sometimes a few casts and a temporary trace of albumin. Furthermore, Eggleton and her collaborators²⁹ have shown in the anesthetized dog that, following the "shock" period after histamine injection, no decrease in creatinine clearance is seen. The chief role in the genesis of renal failure in crush syndrome must therefore be played by substances absorbed from the damaged part.

We have recently analyzed such necrotic muscle from crushing injury; compared with undamaged muscle from the same corpse, it has lost 75 per cent of its pigment, 75 per cent of its phosphorus, 66 per cent of its potassium, 70 per cent of its creatine and 95 per cent of its acid producing substances (glycogen and so on). As has already been detailed, all these substances appear in the first day's urine in increased quantity. Rabbit muscle compressed by rubber tubing for a similar length of time loses all these substances except myohemoglobin within two or three hours after release;³⁰ that is, as soon as the circulation to the part is reestablished: histologically the muscle shows exactly the same

changes as those seen in man. At the same time all the changes characteristic of crush syndrome in man appear (hemoconcentration, hypotension, swollen limb, acidemia and oliguria with acid urine containing creatine) except myohemoglobinuria and renal failure. The rabbit's muscles contain no myohemoglobin: no myohemoglobin was excreted: no renal failure developed. We thought, therefore, that this pigment, of all the substances known to be lost from damaged muscle, ought to be investigated first, not only because of the rather negative results of compressing the rabbit's leg referred to,³¹ but because both the clinical course and the pathologic changes in man resembled so closely the results of a mismatched transfusion. The ill effect on the kidney of the latter was thought by Baker and Dodds³² to be due to the precipitation, in acid urine with high salt concentration, of acid hematin, and subsequent blockage of the tubules: rabbits with alkaline urine could tolerate hemoglobin injections indefinitely. We therefore made good this deficiency of rabbit muscle by injecting human myohemoglobin in quantities per kilogram of body weight comparable with those released in man; in animals with acid urine of a p_H equal to that seen in human beings we were able to produce death after four days in renal failure: the histologic changes in the tense swollen kidney were not, however, exactly similar to those seen in man. While mechanical blockage of the tubules may play a small part, it seems probable from some preliminary experiments that myohemoglobin in these rabbits with acid urine acts in a more direct way on the tubules, perhaps by producing a physiologic (resorption) blockage with a rapid rise in intrarenal pressure. It is far from certain, however, that this lesion is the same as that seen in man. In the anesthetized dog, whose muscles contain myohemoglobin, Eggleton, Richardson, Schild and Winton²⁹ are of the opinion that the depression in creatinine clearance which follows tight binding of the limb for five hours with additional crushing and hammering is not in any way due to blockage. Their experimental procedure produced flaccid kidneys, whereas, if blockage or tubular poisoning was involved, tense swollen kidneys should be found. They noted also that this depressed creatinine clearance could not be prevented by preliminary bicarbonate infusion. They conclude that disturbance of no single mechanism could account for all the observed phenomena. A further interesting observation has recently been made by Eggleton,³³ using the anesthetized cat. Employing a technic similar to that we used in the rabbit, she found that following release of the compression the creatinine clearance fell 50 per cent, while if the circulation was readmitted slowly to such ischemic limbs there was no change. Later experiments suggest that the liver, given time, was able to detoxicate the blood returning from the damaged area. Again, it is not yet certain that this renal damage produced in cats and dogs is the same as in man, since in the latter the criteria are clinical, whereas in these acute animal experiments no data on recovery have yet been obtained: the criterion has been chiefly that of creatinine clearance.

28. S. L., and G. K. R.: A Case of the Crush Syndrome with Recovery, *London Hosp. Gaz.* 44: 126 (June) 1941.

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DIFFERENTIAL DIAGNOSIS

It must be remembered that injuries may often be multiple: "blast lung," "fat embolism" and cardiac infarction are complications we have seen which confuse the issue. We have recently seen hemoglobin concentration of 19.8 Gm. per hundred cubic centimeters in a man buried for twenty-four hours resulting from paralytic ileus from pressure of a truss pad, without any gross muscle necrosis. Oliguria due to mismatched blood transfusion, oligemic hypotension and crystal calculi must be differentiated. Hematuria and hemoglobin may be differentiated by examination of the urine.

TREATMENT

Treatment is to be considered under four headings:

1. *Administration of Fluid and Alkali.*—The first and most urgent step is an attempt to guard against renal failure by the establishment of an alkaline diuresis. Instructions should be issued to civil defense personnel to give sodium bicarbonate by mouth and nonmilky fluids such as tea, coffee and water if possible before release from compression of patients buried for one to two hours or more: if necessary, release should be delayed for twenty to thirty minutes to allow this to be done. Patients so treated should wear an identifying label and be followed with especial care. It seems probable, however, that most patients will not have had this alkali and fluid given before they enter the hospital. They should be given sodium bicarbonate or other mild alkali 4 Gm. hourly by mouth until the urine is alkaline. Dosage should then be continued over the next two days, to maintain alkalinity, at a rate of about 30 Gm. a day. Should vomiting preclude oral administration or if it is desired to alkalize the urine within two hours, 1 liter of isotonic sodium lactate (one-sixth molar = 2 Gm. per hundred cubic centimeters) should be given intravenously. This may be made up in small bottles of 50 cc. in tenfold strength (20 Gm. per hundred cubic centimeters) and diluted ten times before use. (It keeps well and can be sterilized by boiling or autoclaving.) If this is not available, 3 to 4 per cent sodium citrate may be given but has the disadvantage in large amounts of producing tetany. Sodium bicarbonate (1.4 per cent) may also be given intravenously, but, as this will decompose on heating in the open, sterilization is difficult: in an emergency a measured amount may be dissolved in sterile water (2 teaspoons to a pint) and injected without sterilization. It must be emphasized that this alkalization to be effective should be early and thorough, being controlled by the reaction of the urine. If possible it should precede measures taken to improve the circulation in the injured part. A fluid intake of at least 3 liters daily should be assured, either by mouth or by vein. The volume of the urine must be measured over twenty-four hours.

2. *Treatment of "Shock."*—This should follow hydration and alkalization. The patient may be leaking plasma into the injured area, sometimes without outward sign if the trunk is affected. This may pass on to "oligemic shock," although the blood pressure remains normal for a time because of vasoconstriction. Since renal function is likely to be further impaired by a fall in blood pressure, it is important that this "preshock" stage should be recognized and prompt

treatment instituted. Serum or plasma should be given before the blood pressure falls—in the stage of hemoconcentration. Blood may be necessary if more than 2 liters of fluid has to be used or if hemorrhage has occurred. Morphine should be given for pain. The patient should not be heated, unless he is uncomfortably cold, and then blankets will probably be sufficient.

3. *Local Treatment.*—The injured limb should be kept cool with ice bags, as this will decrease the rate of autolysis and also allow living tissue to survive on a low margin of blood supply.³⁴ Immobilization may prove a useful measure, since absorption of large mole-culed substances occurs chiefly by way of the lymphatics. If circulatory obstruction should occur, fascia splitting incisions may be made along the course of the main limb vessels, once the urine is alkaline. Plaster casts may be applied after splitting the fascia but not before (unless they are bivalved): a closed cast may prove a more dangerous constricting agent than a tight fascial sheath. If obstruction is due to spasm, this may be relieved by stripping or resection of the damaged portion of the vessel.³⁵ Amputation should be done only if the leg is so severely damaged as to be useless and then in the first twenty-four hours. The value of tight bandaging is uncertain: while it will decrease the severity of shock by limiting fluid loss (Duncan and Blalock,³⁶ Katz¹⁵) observations have yet to be made of its effect both on the kidneys and on the residual local lesions. Later, splinting will be necessary in the optimal position; physical therapy and occupational therapy will have an important part to play in the recovery of function.

4. *The Treatment of Cases with Established Renal Failure.*—If renal damage is well established, all therapeutic efforts may be unavailing. On the other hand, some patients with very severe lesions and high blood urea levels (e. g. up to 490 mg. per hundred cubic centimeters) have recovered without any treatment other than bed rest. The results of any particular treatment must therefore be viewed with a critical eye. The use of diuretics such as sodium bicarbonate and concentrated serum may be of value. Mercurial diuretics have also been used, and decapsulation has been advocated. Insulin and dextrose may prove to be of value in some cases.

In conclusion, very little is yet known about the effects of therapy. The evaluation of treatment depends on the ability to forecast the outcome without treatment, and that is often difficult, even with the complete investigation possible in research centers. Further work is needed, both from the experimental laboratory and, using suggestions derived therefrom, in man. For this, that very full collaboration between physician, surgeon and pathologist is needed which, on a larger scale, between freedom loving nations, is beginning to emerge as one of the few happy developments of these unhappy times.

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INJURIES TO THE KIDNEY

A. J. SCHOLL, M.D.

LOS ANGELES

Injuries to the kidney vary from mild contusions to complete maceration of the entire renal mass. The majority occur in men, owing not only to greater exposure and more strenuous physical activity but also to the more inflexible muscular fixation of the kidney.

Injuries to the kidney are divided into open, or penetrating, and closed, or nonpenetrating, wounds. During peacetime the majority of renal injuries are of the closed type, occurring in civilians and resulting from traffic and industrial accidents and not infrequently from vigorous athletic activity, particularly football. Usually these injuries are slight, causing some pain and hematuria and requiring only expectant treat-

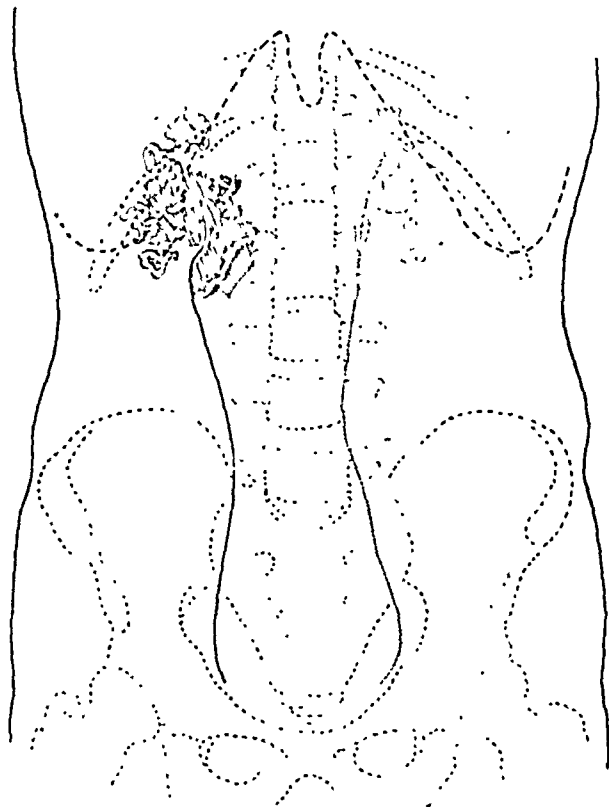


Fig. 1. Extensive tear of the renal pelvis following efforts to extract a stone impacted at the ureteropelvic junction.

ment. In wartime the incidence of penetrating wounds increases, and these are mainly gunshot injuries, due either to rifle bullets or to shrapnel. Apparently the location and protective covering of the kidneys prevent them from being injured by other types of war wounds, such as air and immersion blast injuries. In blast injuries, usually the lungs and hollow viscera alone are affected, the kidneys and other solid organs rarely being damaged.

Recent advances in urologic diagnosis, use of the newer urinary antiseptics and more conservative surgical procedures have all reduced the seriousness of both types of renal injuries and the incidence of both early and late complications and sequelae.

PATHOLOGY

Closed injuries to the kidney vary from a slight subcapsular hemorrhage to complete destruction of the parenchyma with or without injury to the hilus. The

most common lesion is a tear through the capsule with mild injury to the parenchyma, usually causing only moderate pain and hematuria and rarely necessitating surgical treatment. Patients requiring surgical intervention generally have rather extensive damage with multiple fissures of the parenchyma which may at times completely fragment the kidney. The blood vessels are always torn, bleeding is free and perirenal hematomas are common. On surgical exploration, the most striking feature is the large amount of clotted and free blood surrounding the renal mass. If the capsule is not torn, the bleeding may cause only a localized subcapsular hemorrhage. In some cases one pole, or both, is torn from the kidney, or the kidney may be divided by a deep fissure which opens directly into the pelvis. Extensive parenchymal tears usually follow a transverse line of cleavage which opens up between the large tubules and vessels. If the fissure involves only the parenchyma, rarely will urine be found in the wound, but if it extends into the pelvis or calices, extravasation of urine usually occurs. If the injury is slight and the urinary extravasation small, the urine may be absorbed or it may form a perinephric abscess with extensive adhesions and matting of the perirenal tissues. In patients without infection and with intact perirenal tissues, pseudohydronephrosis may result.

Rupture of the renal pelvis occurs occasionally during instrumental urologic manipulations, most commonly during efforts to manipulate calculi either in the pelvis or in the upper part of the ureter. Occasionally very extensive tears of the pelvis may result from vigorous attempts to deliver a rigid instrument with its attached stone. In 1 case, at surgical exploration of the kidney several days after such an accident, two fingers could readily be passed into the renal pelvis (fig. 1). In such injuries to the pelvis and ureter, urinary extravasation spreads rapidly, and unless early exploration is carried out, infection, edema and adhesions make any conservative procedure impossible.

Perforation of the renal pelvis or renal parenchyma may result from the use of stiff or styleted ureteral catheters. Fortunately such accidents, which possibly are not always recognized, rarely cause permanent damage.

Nontraumatic, or spontaneous, rupture of the kidney is extremely rare. In most reported cases it has occurred in diseased kidneys. Infection, chronic nephritis and hydronephrosis are the most frequently associated conditions. Henline¹ was able to collect only 24 cases from the literature and reported 1 case of his own of a spontaneous rupture resulting in a perinephric abscess which burrowed down to the perineum. In some cases the trauma is so slight as to be overlooked or not considered a factor in the rupture of the kidney.

Penetrating injuries, whether caused by gunshot or stab wounds, rarely affect only the kidney; usually the renal injury is of minor importance, being not infrequently overlooked. The most common penetrating wounds of the renal parenchyma are of the perforating type, although furrows, complete destruction of either pole or extensive shattering of the kidney may occur. In penetrating injuries, as with closed lesions, parenchymal wounds may be slight, especially those in which the edges or poles are damaged. When the center of the kidney is injured, the damage is usually severe.

This paper, in a symposium on "War Injuries," is published under the auspices of the Section on Urology.

1. Henline, Roy Biggs: Spontaneous Rupture of the Kidney, J. A. M. A. 83:1411-1414 (Nov. 1) 1924.

The nature of the projectile has little particular effect on the injury, although bullet wounds destroy a portion of parenchyma only slightly larger than the size of the bullet, whereas shrapnel makes a more irregular wound, with greater destruction of tissue. In shrapnel injuries the edges of the wound are more likely to be contused, and the adjacent parenchyma may become necrotic on account of arterial injury.

In wounds involving the hilus, the renal artery or one of its larger branches may be divided. When the renal artery has been severed the patient usually dies before reaching the hospital; when one of the larger branches has been cut through or obstructed by formation of a clot, nephrectomy is usually resorted to. Although renal veins anastomose, the arteries do not, and consequently arterial injury, even of the smaller vessels, may cause extensive cortical necrosis. In an occasional case the renal vessels are divided, leaving an intact ureter. The renal pelvis and the renal artery and veins are infrequently injured, though they may be injured by the same missile.

SYMPTOMS AND DIAGNOSIS

Hematuria, pain and abdominal rigidity are present in most cases. The location of the wound and the presence of hematuria are usually the first indications of renal damage in penetrating wounds.

Pain and Abdominal Rigidity.—In slight injuries only tenderness may be present, but in the majority of cases pain is present, varying in degree from a constant discomfort to severe and agonizing colic, which usually increases on movement. Like renal colic from any cause, the pain may radiate to the groin or into the thigh. Pain is due to injury to the soft parts, distention of the renal capsule or passage of blood clots down the ureter. Rupture or tear of the renal pelvis, particularly in cases of instrumental injury, causes a sudden, sharp onset of severe pain. There are partial fixation and rigidity of the abdominal wall and tenderness on abdominal palpation over the injured kidney and in the corresponding costovertebral region. Rarely is abdominal relaxation sufficient to permit accurate palpation of the renal region, although in some cases extensive perirenal bleeding produces a large mass in the flank which is readily felt through the rigid muscular wall. When the abdomen has been perforated by a bullet wound, extensive abdominal rigidity is usually present, although either partial or generalized abdominal rigidity does not always mean a lesion of the peritoneal cavity. Gunshot wounds of the chest or chest wall, extensive hematoma of the renal region or intra-abdominal hemorrhage from any condition also can cause abdominal rigidity.

Shock.—Usually, though not always, shock is present. In uncomplicated cases it is generally not severe and depends to a certain extent on the amount of blood lost. Fear, exposure and delay greatly increase the incidence of shock in war injuries. Shock developing after several days usually means either increased or recurrent bleeding. In cases in which an injury to the abdominal viscera, thorax or spinal column is associated, shock usually is severe. Even in uncomplicated renal injuries, however, the severity of shock is not always an accurate index of the degree of renal damage.

Hemorrhage.—Bleeding is the most serious complication, usually involving the kidney and perirenal tis-

sues. In some cases the bleeding is extensive, forming a massive perirenal hematuria. The bleeding has a tendency to cease spontaneously, possibly owing to increased pressure in the restricted perirenal space. An associated rupture of the peritoneum permits the blood and urine to drain from the closed lumbar space into the peritoneal cavity; occasionally large amounts of blood and clots must be removed from the peritoneal cavity at the time of renal repair.

Hematuria.—Varying from microscopic amounts to massive hemorrhage, blood is present in the urine in most cases, although the hematuria may not occur immediately. In the early stages it is not excessive, and after several days it tends to cease spontaneously. If the wound involves only the parenchyma of the kidney, hematuria may be slight or absent.

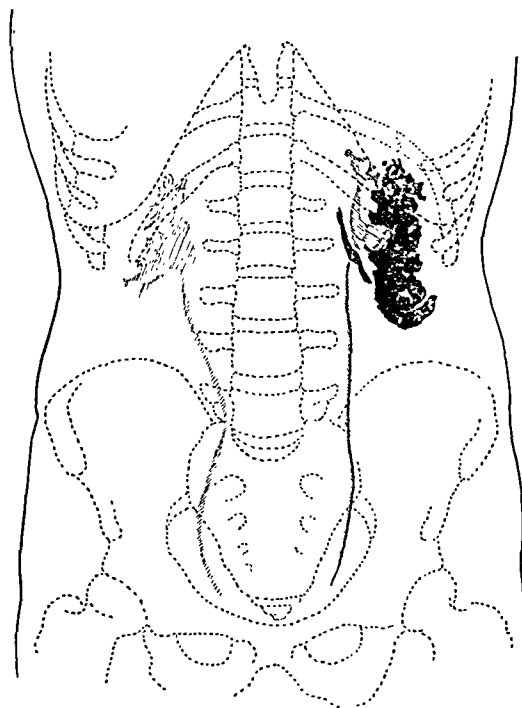


Fig. 2.—Complete pulpification of the kidney associated with rupture of the spleen and tear of the peritoneum.

It is necessary to make certain that the blood is coming from the kidney and not from the bladder, as the blood coming from the latter is a not infrequent manifestation of associated injury of the spinal cord, particularly in cases of gunshot injury. In all cases of wounds of the flank, the urine should be examined for microscopic evidence of blood. If necessary, catheterization should be done, as retention is common in cases of renal injury and may be due to a concomitant lesion of the spinal cord. Absence of hematuria may be due to division of the ureter, to obstruction of it by clots or fragments of renal tissue or to extensive damage to the renal pelvis.

Secondary hemorrhage into the bladder is fairly frequent and is most common in the second or third week after injury but may appear as late as two months afterward. It is not unusual for late hemorrhages to be so severe that they cause death. Consequently it is desirable, even in cases in which only slight renal injury is present, to keep the patient absolutely quiet,

preferably at rest in bed, for at least two weeks after injury. Secondary hemorrhage may be spontaneous or it may be an exacerbation of persistent primary hemorrhage. Differing from the primary bleeding, it may be accompanied by clotting of blood in the bladder.

Urography.—Roentgenographic examination gives definite diagnostic information relative to the state of the kidney and the possibility of associated bony lesions and should be made as soon as the patient reaches the hospital, as gas distention develops quickly and obscures the renal outline. A plain roentgenogram of the kidney may be taken in the presence of extensive secondary injuries which prohibit more detailed urologic studies. Haziness of the renal outline, obliteration of the margin of the psoas muscle or deviation of the spine away from the injury suggests perirenal bleeding (fig. 2).

Excretory Urography.—In the case of war injuries there rarely is time or opportunity for excretory uro-

They have the disadvantage that the secretory powers of the kidney may be inhibited or reduced by trauma and that in the presence of shock the ability of the kidney to secrete is reduced still further by a drop in blood pressure and lowered volume of blood to the kidney. During the period of recovery the secretory power of the damaged kidney as well as that of the sound, contralateral organ is inferior to the immediate post-traumatic ability to secrete. Domrich³ has shown that the secretion of the kidney continues after trauma as long as the tissue and renal blood supply are intact but that during recovery secretion of a traumatized and intact kidney is less than that observed immediately after trauma. Therefore in most cases excretory urography performed shortly after rupture gives the most reliable information concerning the gravity of the lesion. There are cases, however, in which early excretory ureteropyelograms are unsatisfactory and in which better results may be obtained twenty-four to forty-eight hours later.

Excretory urography is particularly graphic in cases of minor injury to the kidney and is usually of more diagnostic assistance in cases of gunshot wounds than in cases of rupture from civilian trauma, as gunshot wounds frequently leave a large proportion of the kidney undamaged. In some instances of even fairly extensive tears, sufficient opaque solution is secreted by the remaining normal segment of parenchyma to indicate the extent of damage present.

Prather⁴ states that lack of visualization of the injured kidney in an intravenous urogram is important and indicates the presence of a pathologic process requiring surgical exploration. By contrast, visualization of the injured organ does not rule out injury. Stirling and Lands⁵ were able to make a positive diagnosis by means of an intravenous urogram in 23 of 34 cases studied. A retrograde pyelogram was necessary in only 7 of their cases.

Cystoscopy, Ureteral Catheterization and Retrograde Pyelography.—Sometimes these may be necessary to establish the diagnosis, and usually they give much more accurate information than that obtained by excretory urograms. However, in the case of war injuries lack of time or equipment usually prohibits these procedures in the early days after injury. Moreover, cystoscopy is usually hazardous in the presence of shock or extensive bony lesions. Exacerbation or recurrence of bleeding may follow shifting of the patient's position or, more rarely, instrumental manipulations. When cystoscopy is indicated and can be carried out, and time and the condition of the patient permit, it should be done.

Retrograde pyelography offers definite, accurate information concerning the condition of both the injured and the opposite kidney (fig. 4). The risk of infection resulting from cystoscopy is slight, and no harm comes from injecting the newer, absorbable contrast solutions. On the other hand, cystoscopy is rarely necessary in cases with slight trauma and minimal bleeding.

In the majority of cases of gunshot wounds, particularly those encountered in the front line hospitals, the

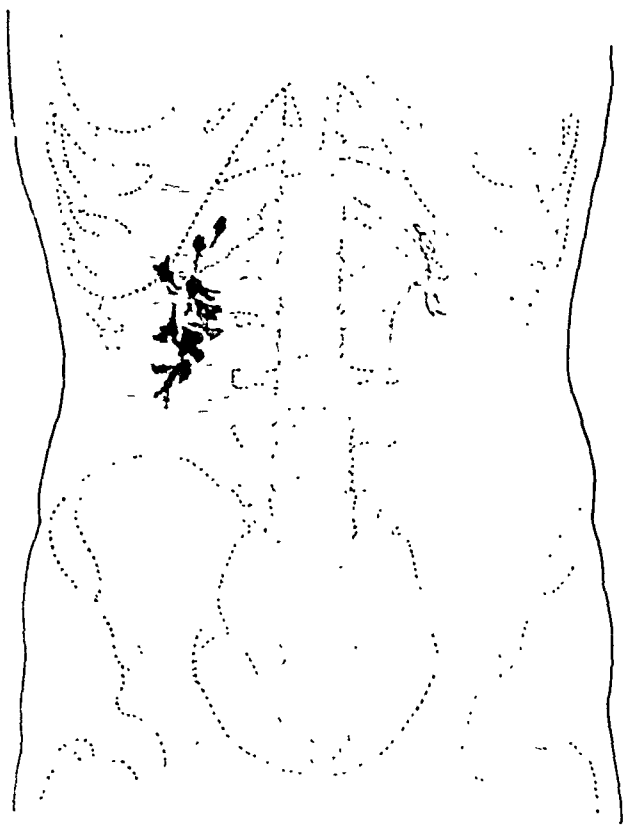


Fig. 3.—Intravenous urogram, showing multiple extensive tears of the parenchyma of the right kidney.

raphy in the first few days after trauma, but when possible it is of great assistance. Intravenous urography aids in locating and defining the extent of the injury and determines the presence and function of the opposite kidney. While the incidence of single kidneys is low, the possibility should be considered in all cases. Turton and Williamson² reported 1 case of traumatic rupture of a single kidney and collected 4 more from the literature; the right kidney was absent in all the cases. If a fair concentration of the opaque medium is excreted by the injured kidney, it is probable that the renal injury is slight and early treatment unnecessary.

Excretory urograms, similar to plain roentgenograms, can be made in the presence of extensive complications and even when the patient is unconscious (fig. 3).

2. Turton, J. R. H., and Williamson, J. C. F. L.: Traumatic Rupture of the Congenital Solitary Kidney, *Brit. J. Surg.* **23**: 327 (Oct.) 1935.

3. Domrich, H.: Versuche über die Funktion verletzter Nieren, *Ztschr. f. Urol.* **32**: 78-90 (Feb.) 1938.

4. Prather, George C.: Traumatic Conditions of the Kidney, *J. A. M. A.* **114**: 207-210 (Jan. 20) 1940.

5. Stirling, W. C., and Lands, A. M.: Etude expérimentale des facteurs secondaires aux traumatismes des reins, *J. d'Urol.* **43**: 304-312 (April) 1937.

finer points of diagnosis obtainable by cystoscopy are time consuming and unnecessary. The only immediate questions to be settled are Is operative intervention imperative? and Is the opposite kidney capable of sustaining life in the event that nephrectomy is obligatory? The intravenous urogram usually gives a satisfactory answer to both of these questions. With penetrating injuries the physical findings, site of entrance of the projectile, pain, swelling and hematuria generally determine the diagnosis and the location of the lesion. With closed wounds the history of trauma and persistent pain and hematuria suggest the need for further investigation.

In those cases in which satisfactory ureteropyelograms are obtained, the visualized changes in the course of the ureter and the outline of the renal pelvis give accurate information concerning the pathologic changes

other a severe urinary infection which was still present one year later. Three patients with minor renal injury, as reported by O'Connor,⁶ resumed their active life a short time after injury, and all 3 later had massive hemorrhage which required surgical intervention.

The main point to be settled regarding any renal injury, penetrating or nonpenetrating, is whether exploration is necessary and, if so, when. Some surgeons state that patients having a history of trauma and hematuria of more than twenty-four hours' duration should have exploration. Others favor a policy of watchful waiting. Lowsley and Menning⁷ declared that any patient who has a history of trauma and who has had hematuria for more than twenty-four hours should have the benefit of an exploratory operation. They state that such a procedure is now considered to be more conservative than hopeful waiting. When there are

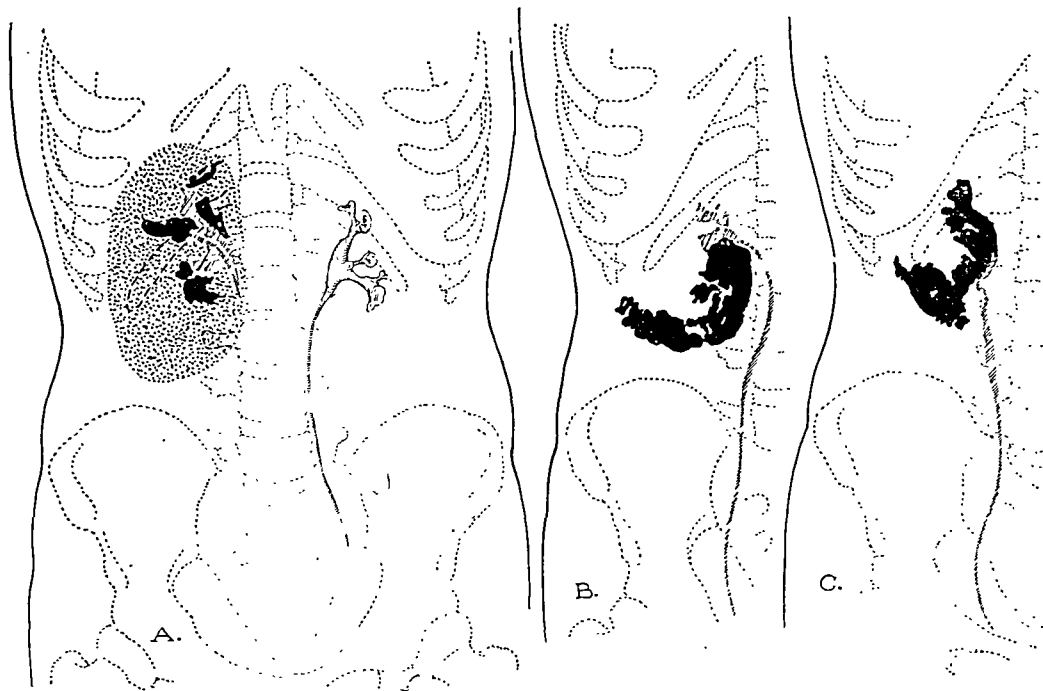


Fig. 4.—Rupture of the right kidney. *A* shows a large hematoma extending from the costal margin to the crest of the ilium. *B*, taken two weeks later, shows the palpable mass to be much smaller, with extension of the shadowgraphic substance around the lower pole of the kidney. *C*, a pyelogram taken two months after injury, showing the renal mass to be approximately normal in size. (Case of Dr. C. F. Rusche.)

present. Deviation of the ureteral outline toward the vertebral column, upward displacement of the ureteropelvic juncture and narrowing of the calices suggest perirenal extravasation.

TREATMENT

In many cases, particularly of penetrating injuries, care of the renal condition is less urgent than that of complicating lesions, and in a large number only conservative local treatment is necessary. Palliative treatment is sufficient and yields good results in the majority of both open and closed types of injuries, but bed rest is essential, and careful observations should be made of the extent of hematuria, of the amount of pain and for evidence of hemorrhage and infection. Early return to routine life may cause serious trouble. Two of my patients, football players with mild renal injury, returned to active life after only a few days rest; one had an extensive secondary hemorrhage, the

signs of internal hemorrhage, such as a rising pulse rate and a falling blood pressure, immediate operation may be necessary, but in the average case little is lost by a period of observant waiting. This delay allows the patient time to recover from shock; the necessary diagnostic examinations may be carried out and, if exploration is finally necessary, surgical hemorrhage is usually less in amount than it would have been immediately after injury. The final decision as to whether to explore the renal area depends on the surgeon, and it varies in individual cases. Continuous hematuria and signs of infection or of internal hemorrhage all indicate that extensive damage is present and that exploration is necessary. Sometimes, even though

6. O'Connor, Vincent J.: Injuries of the Kidney with Remarks on the Effects of Trauma in General on Urinary Infection and Stone Formation, *Illinois M. J.* 69: 541-544 (June) 1936.

7. Lowsley, O. S., and Menning, J. H.: Treatment of Rupture of the Kidney, *J. Urol.* 45: 253-271 (March) 1941.

the patient has recovered from the immediate effects of the injury, some surgical procedure may be necessary to prevent later complications or even complete destruction of the kidney.

Shock, common with war wounds, is rare with uncomplicated renal injuries and should be treated symptomatically. When it is due to renal bleeding, exploration of the kidney is indicated. Hematuria, even though pronounced, is not sufficient reason for early surgical exploration. Primary hematuria usually subsides in twenty-four to forty-eight hours, but if it persists and is profuse the kidney should be explored. Urinary extravasation usually calls for early and extensive incision and free drainage of the region.

In cases of a penetrative wound or a closed wound with extensive trauma in which it is doubtful whether the abdomen or the renal region should be opened, one should remember that lumbar incision carries less risk, and that, if necessary, the abdomen can be explored through the same incision. The renal region should be explored first. An adequate lumbar approach permits evacuation of clots and thorough visualization of the kidney and opens an easily drained region that may be securely packed if necessary. After repair of the kidney is completed the lower angle of the incision may be elongated transversely, the peritoneum opened in front of the colon and the adjacent viscera examined. This is especially important in gunshot wounds, as the peritoneum and its contents are damaged in more than 90 per cent of the cases.

Abdominal Approach.—In cases in which primary abdominal exploration is performed and renal damage is probable, the kidneys should be palpated. In some cases positive information is obtained by use of this route, but, if injury is present, usually an obscured field due to perirenal bleeding makes it difficult to determine the extent of renal damage even if the posterior layer of peritoneum has been opened over the kidney. Exploration of the renal region transabdominally is usually not advisable, as it opens up a poorly drained field, which is readily contaminated from frequently present abdominal infections. If during abdominal exploration a hematoma or obvious renal damage is found, it is unwise to open the posterior portion of the peritoneum for either further exploration or evacuation of clots. For the same reason transabdominal nephrectomy is particularly hazardous, bears a high mortality record and should rarely be done. Many fairly large perirenal hematomas do not need immediate evacuation. Although they may eventually cause further renal damage and disability, no harm results from delaying their removal until opportunity and the state of the patient make this procedure safe.

When conditions found during the course of laparotomy indicate that exploration of the renal fossa is necessary, a second incision should be made, with the lumbar approach. It is, however, preferable to postpone renewed intervention for several days. On the other hand, early exploration is imperative in cases in which bleeding from the kidney is excessive, although it may have incited considerable shock.

Wounds of Kidney, Liver and Diaphragm Combined.—Combined wounds of the kidney and liver, although serious, usually require only conservative management, and frequently surgical intervention is neither advisable

nor necessary. Wounds of the diaphragm encountered in the course of exploration of the kidney rarely require repair.

Surgical Procedures for Wounds of Kidney.—In the treatment of wounds of the kidney there are three possible surgical procedures: (1) drainage of the renal region, (2) partial nephrectomy and repair of the injured kidney and (3) nephrectomy.

Drainage of Renal Region: This is the most satisfactory procedure in cases of penetrating wounds, especially when shock is present and exploration urgent. It permits inspection, evacuation of blood clots and control of bleeding. It is the simplest procedure and may be done quickly with only slight risk to the patient. Foreign bodies and fragments of shrapnel should be searched for carefully and removed. All loose fragments of tissue should be taken out. Drainage should be free and plentiful. The drains should be placed carefully to reach all parts of the wound. In closing the incision one should take care not to suture so tightly that obstruction of drainage results.

Drainage is indicated if time or the condition of the patient has not permitted complete studies to determine the condition of the opposite kidney.

If hemorrhage is encountered, an effort should be made to control it with catgut ties or sutures. In suturing or clamping bleeding points one should exercise care not to injure the peritoneal contents or the great vessels; on the right side the duodenum lies close to the kidney and is easily damaged. No large segments of tissue should be grasped with toothed forceps, and no extensive or deep suturing should be done without certain knowledge of the involved structures. Usually general oozing does not permit complete localized hemostasis and is best controlled by packing with iodoform or plain gauze. Lumbar incision permits firm packing, and sufficient gauze should be used to control all bleeding. A piece of rubber dam or similar material should be spread in the wound before packing to facilitate removal of the gauze and to prevent recurrence of bleeding when the gauze is taken out. When lacerations of the kidney are severe and when the patient is in a precarious condition, thorough packing controls the hemorrhage until the patient is better able to stand nephrectomy.

When the kidney is not removed and drainage is installed, it should be continued until at least the tenth postoperative day.

Partial Nephrectomy, Renal Repair and Plastic Operations: These procedures frequently are employed with satisfactory results for closed, uninfected, civilian types of renal rupture but usually are unsatisfactory for infected, penetrative wounds. Many injuries for which a plastic operation would be sufficient and satisfactory will heal without surgical intervention. Extensive plastic procedures following widespread destruction of the kidney not uncommonly result in a functionless kidney. When partial nephrectomy or suture has been done, parenchymal infection, necrosis and late bleeding may necessitate reopening the wound later and, in some cases, secondary nephrectomy.

The control of hemorrhage usually calls for surgical intervention. A partial nephrectomy is not likely to remove the cause of the bleeding, and a patient already anemic should not be exposed to the risk of a fresh hemorrhage from a sutured or a partly resected organ.

Rarely are limited operations justifiable in the treatment of penetrative wounds.

Nephrectomy: The kidney should be removed in cases of persistent hematuria, multiple deep lacerations of the parenchyma or damage to the vascular pedicle. A patient who has rupture involving the entire vascular pedicle rarely reaches the operating table in a condition suitable for operation.

When the ureter is severed, the pelvis torn or the kidney lacerated and urine is escaping from the wound, results are usually poor unless nephrectomy is done. However, in the presence of a ureteropelvic tear, slight or no infection and a sound kidney, no harm results from the flow of urine over tissues as long as it has a free exit.

Nephrectomy is a simpler procedure than most conservative or repair operations and usually removes the cause of bleeding. In the small group of cases in which the condition of the patient is satisfactory and the kidney so damaged that ultimate nephrectomy will be necessary, or there is uncontrollable bleeding from the kidney, nephrectomy is the procedure of choice. Nephrectomy takes less time than a repair, removes a potential field for infection and limits future bleeding from the operative site. It also eliminates a secondary operation and the late disability and sequelae which so frequently follow reparative procedures.

In the early days after injury nephrectomy is difficult and hazardous. Most observers agree that in only rare instances is early nephrectomy indicated or advisable. Increased experience has shown that in many cases, particularly of gunshot wounds, in which early nephrectomy would formerly have been employed, better results are obtained by efficient drainage; nephrectomy, if it is necessary, is left until a later date.

LATE RESULTS

Patients who have nephrectomy for an injured kidney usually obtain good results and are able to lead a normal life. On the other hand, complications are frequent in patients treated medically and by conservative surgical measures. Pyelonephritis, urinary fistula, hydronephrosis, ureteral stricture and stone formation not uncommonly occur. Infection is common in untreated patients, at times persisting for years. Perinephric abscess, which occasionally develops, may be drained, leaving the kidney intact.

Dózsa⁸ reported 83 cases of injury to the kidney. Conservative treatment was satisfactory in 79 and operation was performed in 3. Twenty-seven of the patients were seen from six months to thirty years after the initial injury and had to be operated on for probable consequences of the renal injury. Hydronephrosis was present in 6, renal stone in 9 and tuberculosis of the kidney in 10. Priestley and Pilcher⁹ reported a series of 45 cases of ruptured kidneys, 31 of which they were able to follow for periods ranging from four to twenty-six years after injury. Eleven patients who underwent nephrectomy were entirely free of symptoms, 73.7 per cent of those treated medically were entirely well and the remainder of the group had mild symptoms referable to the urinary tract. Cheeth-

am¹⁰ reported a series of 25 cases of so-called late complications seen at various periods after renal injury. All gave a definite history of renal trauma. Three of the 25 were treated medically, but some type of operation was necessary for the remaining 22.

Colston and Baker¹¹ presented a series of 13 cases in which definite pathologic changes in the kidney or perirenal tissue had occurred at varying periods after renal injury. While not condemning conservative treatment of renal injuries, these authors stated that the surgeon must be familiar with the changes that may follow injury and take steps to prevent their development. They said that some of the serious effects might have been prevented by better and earlier surgical methods.

MORTALITY

Collected statistics on renal operations, most of which were published shortly after the turn of the century, suggested that the mortality following renal trauma, whatever the treatment, was high. These statistics were usually based on small groups of cases in which treatment had been carried out in the formative days of renal surgery. Many of the injuries were not recognized early, some milder injuries were overlooked and operation when performed was carried out during a period when any surgical approach to the kidney was attended by a high mortality. These early statistical reports, still quoted by recent textbooks on renal operations, are not comparable to those obtainable with modern accurate diagnostic measures, skilful parenchyma conserving plastic procedures and efficient, universally employed, urinary antiseptics. There was no mortality in a series of 43 cases reported by Cheetham,¹⁰ in 31 of which operation was performed, and there were only 2 deaths, both attributed to severe extrarenal trauma, in a series of 45 cases reported by Priestley and Pilcher.⁹

On the other hand, the mortality is high in complicated cases. Hinman¹² stated that injury of the kidney complicating extensive involvement of certain internal organs becomes a part of the general abdominal problem. Twenty-seven of Hinman's group of 137 cases of renal injury were of this type, and all 27 patients died shortly after admission to the hospital.

Statistical reports from different countries vary widely with regard to the incidence and mortality of war injuries, but agreement is general concerning the rarity of uncomplicated renal lesions and the high mortality in complicated cases. Laewen¹³ collected and reported a group of 57 cases of gunshot wounds through the abdomen and kidney treated in German hospitals; there were only 5 cures, giving a mortality of 87.7 per cent. The results of treatment in British war hospitals are more encouraging. The reports of Wallace,¹⁴ Lockwood and his co-workers,¹⁵ Fraser and

10. Cheetham, J. G.: The Clinical Management of Renal Trauma: Collective Review, Surg., Gynec. & Obst. 72: 573-584 (June) 1941.

11. Colston, J. A. C., and Baker, W. W.: Late Effects of Various Types of Trauma to the Kidney, Tr. Am. A. Genito-Urin. Surgeons 28: 171, (June) 1935.

12. Hinman, Frank: Principles and Practice of Urology, Philadelphia, W. B. Saunders Company, 1935.

13. Laewen: Quoted by Straus, David C.: Recent Gunshot Wounds of the Kidney, S. Clin. North America 2: 635-681 (June) 1922.

14. Wallace, Cuthbert: A Study of 1,200 Cases of Gunshot Wounds of the Abdomen, Brit. J. Surg. 4: 679-743 (No. 16) 1917.

15. Lockwood, A. L., Kennedy, C. M., and Macfie, R. B.: Observations on the Treatment of Gunshot Wounds of the Abdomen with a Summary of 500 Cases Seen in an Advanced Casualty Clearing Station, Brit. M. J. 1: 317-320 (March 10) 1917.

8. Dózsa, Eugen: Ueber die subcutanen Nierenverletzungen und deren Spätfolgen, Ztschr. f. urol. Chir. u. Gynäk. 42: 222-230 (May) 1936.

9. Priestley, J. T., and Pilcher, F., Jr.: Traumatic Lesions of the Kidney, Am. J. Surg. 40: 357-364 (May) 1938.

Drummond¹⁶ and Walters and his associates,¹⁷ published in 1917 and later reviewed by Young for the Surgeon General's report, covered a series of 2,121 cases of gunshot wounds of the abdomen. The kidney was involved in 155 (7.3 per cent) of these cases; 57 per cent of the patients died. For 69 uncomplicated wounds of the kidney the mortality was only 14 per cent. In the American Expeditionary Forces the kidney was involved in 129 of 2,385 cases (5.44 per cent) of gunshot wound of the abdomen. The mortality rate in this group, for both complicated and uncomplicated cases, was 55.8 per cent.

SUMMARY

Renal injuries, both penetrating and nonpenetrating in type, are of infrequent occurrence. Most injuries are mild, causing only slight pain, hematuria and moderate abdominal rigidity. Many penetrative renal injuries require no treatment, and exploration of the renal region should be done only when there is extensive, persistent or recurrent hematuria and free perirenal bleeding, or extensive renal damage is suspected. Early recognition of the renal damage, conservative surgical treatment and suitable bed rest have definitely reduced the mortality and complications of both the penetrative and the nonpenetrative type of injury.

The location of the wound and the presence of hematuria are usually the first indications of renal damage in penetrating wounds. Roentgenographic examination gives valuable information relative to the state of the kidney and the possibility of associated lesions. Excretory urography is of value in indicating the location of the lesion and determining the presence and function of the opposite kidney. If cystoscopy is indicated, and time and the condition of the patient permit, it should be done.

The main points to be settled regarding the treatment of renal injury are whether exploration is necessary and, if so, when. When there are signs of internal hemorrhage, immediate operation may be necessary, but little is lost by a period of observant waiting. This allows time for the necessary diagnostic procedures to be carried out and time for the patient to recover from immediate shock, and, if exploration is finally necessary, surgical hemorrhage is usually less in amount than immediately after injury.

The three most common surgical procedures for both penetrating and nonpenetrating wounds are drainage, nephrectomy and plastic repair. Drainage of the renal area is the most satisfactory early procedure, especially in cases of penetrating wounds. It is simple and brief and permits evacuation of clots, removal of fragments of tissue and foreign bodies and the packing of the region to control hemorrhage. Nephrectomy is employed only when removal of the kidney is urgent, as when there is persistent excessive hematuria, extensive destruction of the vascular pedicle or complete shattering of the kidney. Plastic repair of the kidney, which is not infrequently carried out with success in closed civilian types of injury, is rarely indicated in the penetrative wounds. It is time consuming, at times it is followed by infection and hemorrhage and in some cases nephrectomy is necessary later.

1930 Wilshire Boulevard.

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INJURIES OF THE URETER AND THEIR MANAGEMENT

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Wounds of the ureter alone are rarely encountered, either in civil or in military practice. In a survey of the collected cases of wounds of the urogenital tract from the records of the American Expeditionary Forces (World War I) Young¹ found only 4 cases of injury to the ureter alone. A survey of the records from our clinic revealed 25 cases of ureteral injury, in each of which it was unilateral. The etiologic classification of the series is given in table 1.

TABLE 1.—Etiologic Classification

I. Direct trauma:	
A. Gunshot wounds.....	1
B. Stab wounds.....	0
C. Operations:	
1. Accidental.....	9
2. Intentional.....	4
II. Indirect trauma:	
A. Manipulation of ureteral calculus.....	6
B. Disease processes:	
1. Of ureter.....	2
2. By extension.....	1
C. Injection of caustic.....	2
Total.....	25

TABLE 2.—Summary Data of 25 Cases of Ureteral Injury

Case	Sex	Side	Condition Found	Treatment	Result
1	♀	R	Indirect trauma	Nephrostomy.....	Death
2	♀	L	Indirect trauma	Nephrectomy.....	Recovery
3	♂	R	Direct trauma	Transperitoneal drainage; ureteral catheterization	Recovery
4	♀	L	Direct trauma, skin fistula	Ureterocolostomy.....	Recovery
5	♀	L	Direct trauma, skin fistula	Ureterocolostomy.....	Recovery
6	♀	L	Direct trauma, rectal fistula	Nephrectomy.....	Death
7	♀	R	Direct trauma, vaginal fistula	Nephrectomy.....	Recovery
8	♀	L	Direct trauma, vaginal fistula	Nephrectomy.....	Recovery
9	♀	L	Direct trauma	Repair of ureter.....	Recovery
10	♀	L	Indirect trauma	Nephrectomy.....	Recovery
11	♀	R	Indirect trauma, vaginal fistula	Nephrectomy.....	Recovery
12	♀	L	Direct trauma, vaginal fistula	Ureterocolostomy.....	Recovery
13	♂	L	Indirect trauma, skin fistula	Ureterocolostomy.....	Recovery
14	♀	L	Indirect trauma, vaginal fistula	Repair of ureter.....	Recovery
15	♂	R	Indirect trauma	Ureteral catheterization...	Recovery
16	♂	R	Indirect trauma	Ureterostomy.....	Recovery
17	♂	R	Indirect trauma	Vesical anastomosis.....	Death
18	♂	L	Direct trauma	End to end anastomosis..	Recovery
19	♂	L	Direct trauma	Ureterostomy.....	Recovery
20	♂	L	Direct trauma	Nephrectomy.....	Recovery
21	♂	R	Direct trauma	End to end anastomosis..	Death
22	♀	L	Direct trauma, rectal fistula	Vesical anastomosis.....	Recovery
23	♂	L	Indirect trauma	Ureterocolostomy.....	Recovery
24	♂	R	Indirect trauma	Nephrectomy.....	Recovery
25	♂	R	Direct trauma	Vesical anastomosis.....	Recovery

The management of these injuries depends on the cause of the injury and on the time that has elapsed since it was sustained. If during a surgical operation the ureter is injured, immediate repair is indicated. The ends of a completely divided ureter may be united over a T tube or over a ureteral catheter passed upward to the renal pelvis and downward into the bladder. The anastomosis should be free of tension and the sutures, few in number, should not include the mucosa

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This paper, in a symposium on "War Injuries," is published under the auspices of the Section on Urology.
1. Young, H. H.: Wounds of Urogenital Tract in Modern Warfare, J. Urol. 47: 59-108 (Feb.) 1942.

and should be lightly tied. A patch of fat over the suture line assists in making a water-tight joint. Drainage to the point of anastomosis should be provided, preferably extraperitoneal. These points are well illustrated by the following case, in which operation was performed by an excellent general surgeon,² who consulted me at the time and who has kindly permitted the use of the following data:

CASE 18—A white woman aged 38, married, a quadripara, was undergoing a pelvic operation and the division of dense adhesions when the left ureter was unintentionally included in double clamps and divided. The accident was immediately recognized. A number 8 F. ureteral catheter was passed up the proximal ureteral segment to the kidney and down the distal segment to the bladder. End to end anastomosis was performed with use of number 00 chromic catgut interrupted sutures which avoided the mucosa. A tag of omentum was placed over the suture line. The catheter was removed after one week. The patient recovered without fistula.



Fig 1 (case 3)—Gunshot wound of right ureter: extravasation, opaque medium at injury

The importance of drainage cannot be overemphasized; this may be extraperitoneal, by preference, or transperitoneal, by necessity. Failure to provide for the drainage of urine, which usually leaks from the repaired injury, often results in serious complications and sometimes in the death of the patient. This is illustrated by the following case

CASE 21—During an operation for the removal of a large intraligamentary cyst of the ovary by a general surgeon the ureter was not recognized until after it had been severed, as it had been displaced by the tumor. The severed ends were brought together over a ureteral catheter passed upward to the renal pelvis and downward into the bladder. The anastomosis was tightly performed, but drainage to the point of anastomosis was not instituted. Several days later the patient became acutely ill and showed evidences of general peritonitis, despite the fact that the catheter had been draining regularly. Death ensued shortly thereafter, and the postmortem examination revealed general peritonitis resulting from urinary extravasation.

PENETRATING WOUNDS

Gunshot and stab wounds require immediate operation, particularly when they involve the peritoneal cavity.



Fig 2 (case 3)—End result in gunshot wound of right ureter.

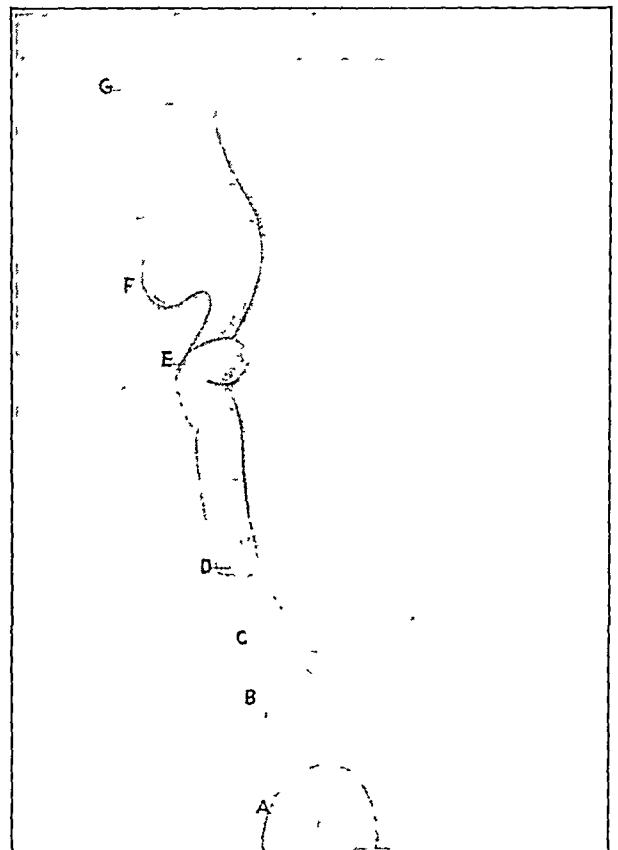


Fig 3—Condition revealed by vaginoureterovaginal graft: A, vulva; B, lower right ureter; C, fistulous tract; D, ureter above injury; E, additional ureteral obstruction; F, hydronephrosis; G, calcified glass

2 Harkness, R. B. Personal communication to the author, 1940

CASE 3.—This case is unique in that a bullet which entered the right lower quadrant of the abdomen traversed the pelvic peritoneal cavity, severed (incompletely) the right ureter, perforated the left side of the sacrum (lead marks) and was palpable under the skin of the left buttock; it injured several

SURGICAL WOUNDS

Accidental injury of the ureter not recognized at the time of operation usually results in complications, the more common of which are fistula, peritonitis and renal infection. In case of noninfected wounds, simple hydronephrosis followed by atrophy of the kidney may not give rise to acute illness and may not require surgical intervention. In the other group, urinary fistula develops in from one to three weeks, twelve days being the average in the series here reported. The fistula may communicate with the incision (skin) or with one of the nearby body outlets. Of the 9 cases, in 5 it complicated hysterectomy; in 2, removal of a large intraligamentous (retroperitoneal) ovarian cyst, and, in 2, excision of the rectum and rectosigmoid. The

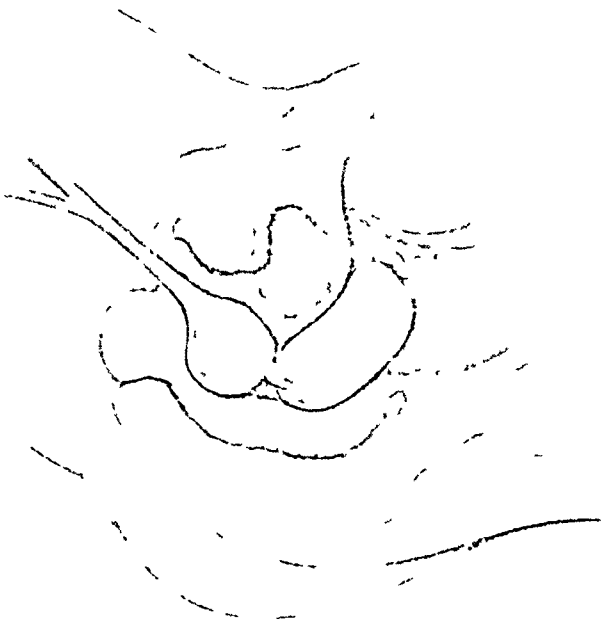


Fig. 4—Employment of bay catheter to introduce opaque medium.

loops of bowel but did not perforate the mucous membrane of any loop. The extravasated urine was drained transperitoneally, as the exploration had been done through a low abdominal incision. It was possible to pass a number 8 F.

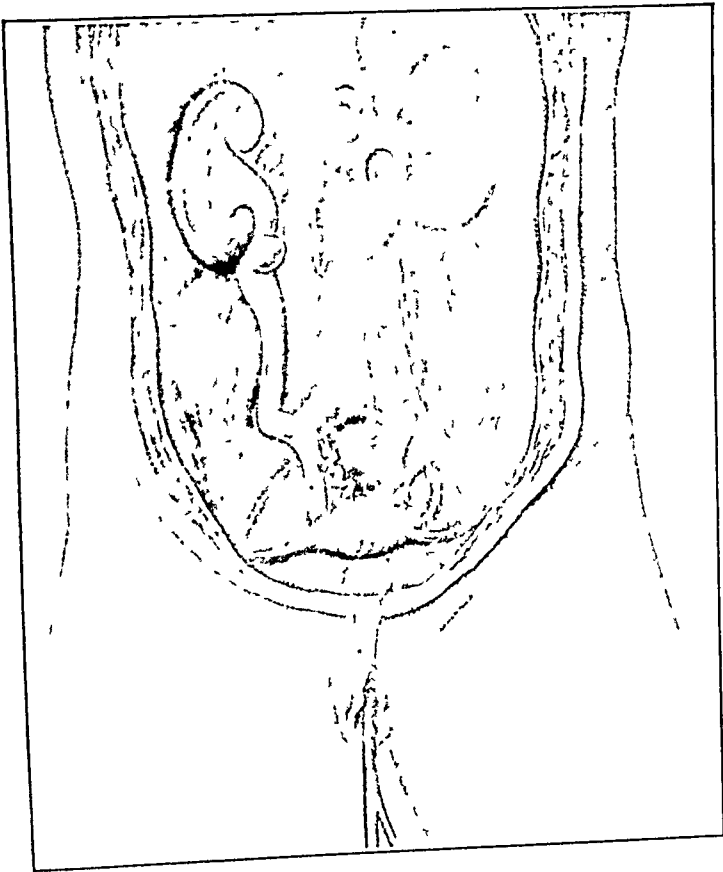


Fig. 5—Anterior view of dissection

ureteral catheter cystoscopically all the way to the renal pelvis, and the catheter was left in place for ten days. The recovery of the patient was uncomplicated except for an incisional hernia, which was repaired six months later (figs 1 and 2).

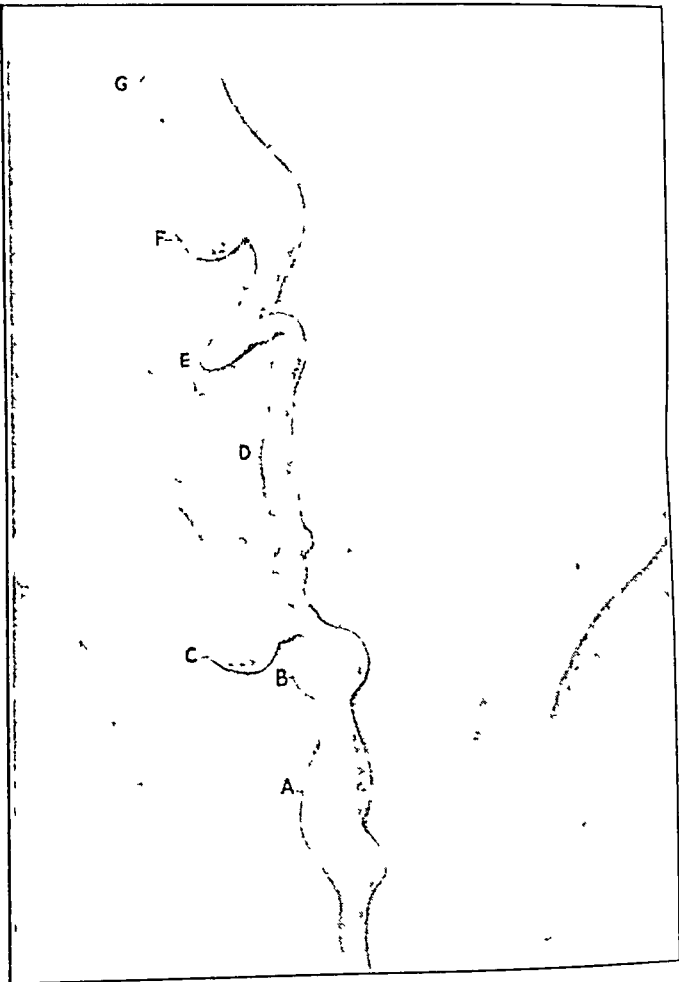


Fig. 6—Condition revealed by rectal space ureteropyelogram A, rectal space, B C, fistulous tract; D, ureter above injury, E, tortuous ureter, F-G, hydronephrosis

fistula communicated with the incision in 3 cases, with the vagina in 4 and with the rectal space in 2. Intravenous urography was helpful in demonstrating the side affected and in locating the site of the injury. Cystoscopy and ureteral catheterization in combination with x-ray and retrograde pyelography are the chief diagnostic procedures. Nephrostomy, pyelostomy or ureterostomy are necessary emergency measures in cases of obstruction or infection. The simplest and quickest drainage should be established for patients acutely ill. This temporary drainage may be sufficient in cases of ureteral ligation or incomplete trauma, as catheterization from below may be possible when the ureteral lumen becomes partially reestablished.

In exceptional cases the introduction of an opaque medium by way of the vagina (vaginoureteropyelography), the rectal space (rectoureteropyelography) or

the fistulous tract (fistuloureteropyelography) may aid materially in evaluating the case. These studies are made after the acute infection has subsided and are carried out in the following manner:

A 30 cc. bag catheter of the Foley type is introduced into the vagina, rectal space or other fistulous tract, as the case may be. The bag is inflated to block the outlet of the tract, and with the patient in the Trendelenburg position an opaque medium is injected through the catheter by means of a pressure syringe, and the roentgenogram is immediately made (fig. 3).

CASE 7.—A segment of the right ureter was accidentally excised during a hysterectomy. Primary anastomosis over a ureteral catheter was unsuccessful and resulted in a uretero-vaginal fistula. The vaginoureteropyelogram demonstrates (A) the vagina, (C) a fistulous tract, (E) an additional ureteral obstruction, (F) hydronephrosis and (G) a calcified gland (proved by other studies). Right nephrectomy was performed, and the patient recovered.

CASE 6 (fig. 4).—An injury to the left ureter, inflicted during excision of the rectum and rectosigmoid but unrecognized during the operation, resulted in a ureterorectal space fistula. The rectal space ureteropyelogram demonstrates (A) the rectal

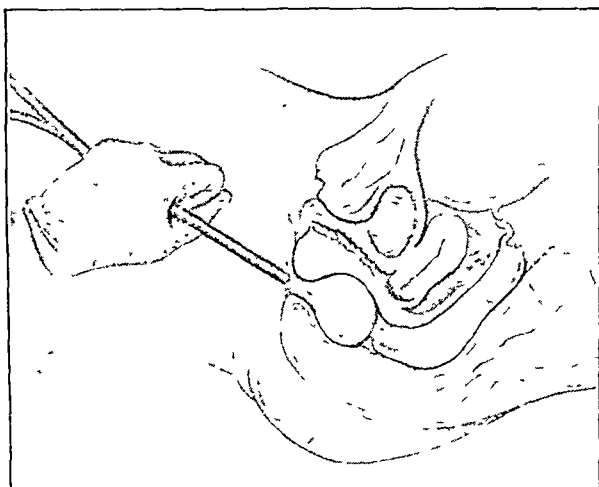


Fig. 7.—Use of bag catheter to introduce opaque medium

space, (B-C) the fistulous area and (F) the hydronephrosis above a tortuous ureter. Left nephrectomy was followed by recovery.

Intentional surgical wounds of the ureter are made for removal of an impacted calculus, for relief of obstructions, for removal of a growth and for various plastic procedures. Owing to a variety of causes, the fistula thus established may persist. Even after nephrectomy a persistent discharge may sometimes annoy both the patient and the surgeon. Ureterograms and fistulagrams, together and separately, will aid in establishing the diagnosis. Patient 11 came under our observation after five operations for calculi in the right kidney and ureter.

CASE 11.—A nephrectomy had been performed for calculous pyonephrosis, after which the patient had a fistula which drained profusely. Figure 9 shows (1) the fistulagram, (2) the right ureteral catheter entering the fistula and (3) the ureter above the fistula before the nephrectomy. Figure 10 shows (1) the ureterogram after nephrectomy, (2) the opaque medium outside the ureter, (3) the drainage tube in the fistula, (4) the pocket in front of the ileum, (5) the ureteral fistula and (6) the ureter. The wound failed to heal, and at a final operation, undertaken with the idea of ureterectomy, a foreign body (sponge) was found in the pocket in front of the ileum. After the removal of this foreign body the wound healed.

MANIPULATION OF URETERAL CALCULUS

Rupture of the ureter, with urinary extravasation, cellulitis and abscess formation, was observed in 6 cases of this series, and in each the rupture had fol-



Fig. 8—Further illustration of employment of bag catheter

lowed the use of instruments within the ureter. One patient died of sepsis from retroperitoneal abscesses. All intraureteral manipulations and instrumentations should be carried out with gentleness, and the surgeon should be prepared for immediate open operation if

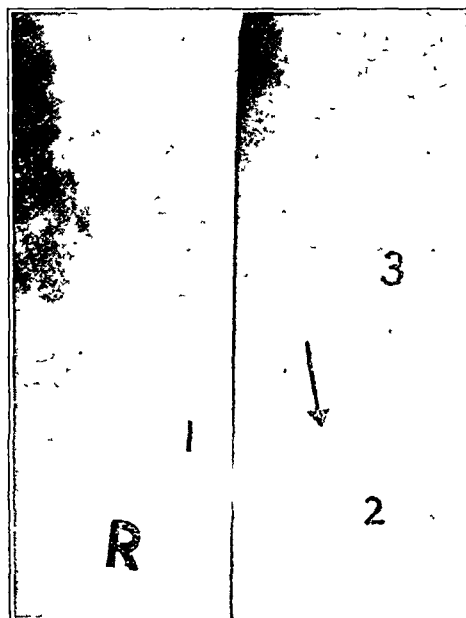


Fig. 9—1, fistulagram; 2, ureteral catheter entering fistula, 3, ureterogram

instruments other than ureteral catheters are to be employed. It is much safer to pass one or more ureteral catheters above an obstructing calculus and allow them to remain in place than to pass a wire basket or other instrument that might injure the ure-

teral mucosa or the entire thickness of the tube. If a basket is used and, after engaging the stone, the operator finds it difficult to extract the instrument, it should be left in place for twenty-four to forty-eight hours, during which time gentle traction is made at intervals.

The ureter which has been injured during the manipulation of a calculus should be catheterized immediately and the catheter left in place. If this is impossible and extravasation has occurred, immediate operation might reestablish the lumen, preferably over a T tube, one end of the T reaching into the bladder, the other up the ureter and the stem emerging through the incision. If this procedure is not possible, then one must either reimplant the ureter into the bladder, transplant the ureter into the bowel, transplant the ureter to the skin or perform a nephrectomy.

URETEROINTESTINAL ANASTOMOSIS

In cases of ureteral injury at or above the true pelvic inlet, reimplantation into the bladder is impossible. Anastomosis of the upper ureteral segment with the colon should receive consideration, particularly when (a) there is previous disease or damage to the contralateral kidney, (b) the kidney under consideration shows a good function, (c) the patient understands the operation and (d) the lesion is on the left side. In cases of injury to the lower urinary tract, I have performed transplantation of the ureter into the colon ten times (8 patients), with no deaths.

INJECTION OF CAUSTIC AGENTS

The accidental injection of a caustic fluid was formerly more likely when sodium hydroxide was included in the cystoscopic setup. This solution was easily mistaken for the opaque medium, and, when it was

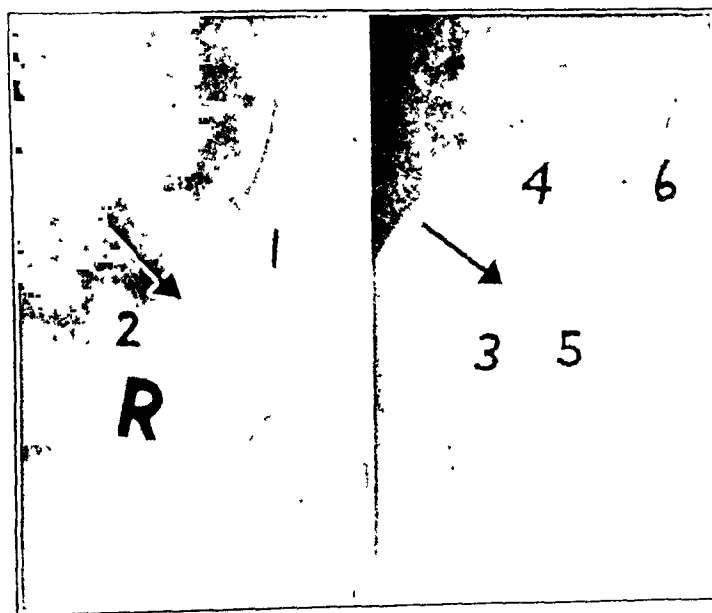


Fig. 10.—1, ureterogram; 2, extraureteral opaque medium; 3, tube in fistula; 4, pocket anterior to ilium; 5, ureteral fistula; 6, ureter.

injected into the ureter and renal pelvis, severe damage to both organs resulted. Two such cases came under my care in a previous decade:

CASE 1.—An elderly white woman was undergoing cystoscopic study. Labels on two bottles had been reversed, and sodium hydroxide was injected through the right ureteral catheter. The patient suffered excruciating pain and went into shock. Several days later a right nephrostomy was performed; the patient's condition was critical and became steadily worse. She died five days after the accident. The postmortem examination revealed suppurative pyelonephritis with cortical abscess and septicemia.

CASE 2.—During cystoscopic examination of a 40 year old white woman, sodium hydroxide was accidentally substituted for the opaque medium and injected through the left ureteral catheter. The patient immediately complained of exquisite pain and went into shock. The solution was withdrawn and the pelvis lavaged with water followed by diluted hydrochloric acid. The patient was returned to her room. The left ureter was drained by catheter. After several weeks of illness she made a partial recovery, at which time she came under our observation. The diagnosis was pyelonephritis, suppurative, chronic, left. Left nephrectomy was performed, and the patient recovered.

SUMMARY

1. Penetrating wounds of the ureter alone are seldom encountered in either civil or military practice.
2. Injury of the ureter should be treated surgically, promptly and with provision for adequate drainage.
3. Ureterostomy, pyelostomy and nephrostomy are employed to combat infection and obstruction.
4. Ureterointestinal anastomosis offers an opportunity to save the kidney in selected cases.
5. Nephrectomy is often necessary.

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BLADDER INJURIES

INCLUDING SPINAL CORD INJURIES AS RELATED TO WAR AND CIVIL PRACTICE

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LINCOLN, NEB.

This paper is suggested by reason of the present crisis through which the world is passing and concerns itself with injuries to the urinary bladder encountered as the result of warfare. Apart from consulting the records of personal experiences in a British base hospital and established medical department statistics from World War I, full acknowledgment is accorded the British surgeons Gordon-Taylor,¹ Clifford Morson² and Ralph Thompson,³ from whose publications material on the present war is largely based.

In the present world conflict, as in World War I, a definite ratio of bladder to general systemic injuries is occurring. The theme, however, in the present war differs in that the ratio is greater and, because of the predominance of high explosive bombing, the non-penetrating or concussion injuries considerably exceed the penetrating. During World War I it is estimated that about 70 per cent of bladder injuries were of a penetrating nature, whereas the blast injuries were at a minimum.

The concussion "blast" produced by modern aerial or artillery bombardments may rupture the abdominal viscera without external wound and produce extensive blood or urinary extravasation. Such injuries may result from hurling against the parietes fragments of wood, iron or masonry from demolished buildings.

The distended bladder has a decidedly increased liability to rupture in circumstances of trauma to the lower abdomen, and unless there is an associated fracture of the pelvis the empty bladder is very rarely ruptured.

This paper, in a symposium on "War Injuries," is published under the auspices of the Section on Urology.

1. Gordon-Taylor, Gordon: War Injuries of the Kidney, Ureter and Urinary Bladder, Post-Grad. M. J. 16: 125 (April) 1940.
2. Morson, Clifford: The Care of the Bladder in Injuries of the Nervous System, Practitioner 14: 305 (May) 1932.
3. Thompson, A. Ralph: Injuries of the Bladder, Brit. J. Urol. 12: 177 (Sept.) 1940.

Fractures of the pubis and the combined fracture of iliac and pubic portions of the pelvic girdle are the types of fractures which are especially prone to be complications with a ruptured bladder. In this respect the greater number of bladder injuries occurring in the present war do not vary manifestly in character from those occurring in our civil life as the result of automobile accidents, industrial injuries, and the like.

In a series of bladder injuries at an English base during World War I, 40 per cent of the bladder injuries were complicated by damage to the pelvic girdle; the pubic portion of the pelvic girdle was most frequently damaged, but no segment of its bony circumference was immune.

The severity of the osseous injury varies from simple perforation or mere notching to that of fragmentation with spicules of bone being driven into the cavity of the bladder. Bony rarefaction may occur with subsequent development of osteomyelitis and sequestration. Bony damage augments the risk and severity of bladder sepsis, with resultant formation of sinus tracts with prolonged discharge of urine and pus from the wound made by the missile or from the openings on the skin of the groin, perineum or thigh as the result of the diffusion of the infection.

Cuthbert Wallace, a British surgeon of World War I, in a series of 965 laparotomies performed at a British casualty clearing station found bladder injuries 45 times, or in 4 per cent of the cases. From a British base hospital during the last great war a detailed study of 53 cases of bladder injury revealed that 70 per cent of the wounds of gunshot origin had the point of entry in the buttock, 70 per cent had the missile retained and in 70 per cent there was concomitant injury of intestine, of bone or of both. The rectum was damaged in 19 cases, in 3 of which the wound was intraperitoneal and in 16 extraperitoneal. A suprapubic wound of entry was rarely encountered in gunshot wounds of the bladder. Rather, as just noted, the entry was mainly through the buttock with the missile traversing in an oblique and upward direction. Other wounds of entry less frequently encountered than the buttock were found in Scarpa's triangle, lower down the thigh and in the iliac fossa, groin, sacral and perineal regions. Bullet wounds of the bladder are occasionally through and through, and, should the empty bladder be perforated from side to side the lesion may assume a benign character.

Because of the awareness that bladder injuries are usually complicated, the time held concept of intraperitoneal and extraperitoneal damage as a simple lesion *per se* is revised.

The Manual of Military Urology incorporates the following statements:

Experience of this war has gone far to eliminate the classic distinction of injuries to the bladder whereby they are divided into two groups, the intra- and extraperitoneal. In the description of symptoms and treatment, however, the distinction of extra- and intraperitoneal injuries must be maintained for the sake of clarity. But in the field the surgeon will find that most of the intraperitoneal bladder wounds are associated with extraperitoneal wounds and that the diagnosis of extraperitoneal injuries founded upon the absence of abdominal tenderness and rigidity may ultimately be belied by a fatal peritonitis. The following classification, therefore, simply represents the various combinations which may occur and artificially dissociates the complex pathologic conditions resulting from wounds of the pelvis or abdomen that involve the urinary bladder.

1. Intraperitoneal injuries.

(a) Wounds.

1. Uncomplicated.
2. Complicated by
 - (a) Perforations of other viscera.
 1. The small intestine.
 2. The colon.
 - (b) Fractures or injuries of bones.
 - (c) Injury to large blood vessels.

(b) Ruptures by concussion.

1. Complicated.
2. Uncomplicated.

2. Extraperitoneal injuries.

(a) Wounds.

1. Uncomplicated.
2. Complicated by
 - (a) Injury to rectum.
 - (b) Injury to deep urethra or prostate.
 - (c) Fractures of the bony pelvis or femur.
 - (d) Injury to important blood vessels.

The symptoms of intraperitoneal wounds of the bladder vary according to the course and size of the lesion, the most noticeable being the urgent desire to urinate and usually the inability to do so. Frequently only a small amount of bloody urine can be expelled. Blood in the bladder is always present but frequently cannot be ascertained except by catheterization. Catheterization may reveal fecal material and gas formation in the bladder, denoting communicating injury of the rectum. With a catheter in situ, an anterior and lateral x-ray examination with air injection or the instillation of a dilute nonirritating opaque medium such as diodrast will establish a diagnosis.

The prognosis of bladder injuries accompanied by intestinal wounds during the first world war was dismal in the extreme. Mortality averaged better than 90 per cent.

It is suggested by Gordon-Taylor that the greatly increased mortality in cases in which operation is performed for intestinal and bladder injury over that attending the surgical treatment of intestinal injury alone may be related to the greater expenditure of time in securing good bladder suture at the end of a time consuming intestinal operation.

To the credit of ever improving surgical technics, the prognosis in bladder injuries with plurivisceral damage is no longer "dismal in the extreme." In the early hours after wounding, the surgeon's activities are now directed toward the immediate saving of life by recovery from shock, systemic antisepsis and adequate drainage, succeeding all of which the surgeon can institute deliberate reparative surgery.

Perforation of the small intestine is most common, but the large intestine and rectum are injured with great frequency. In urgent traumatic surgery of the abdomen no operation is complete until the bladder has been thoroughly inspected. Frequently an unsuspected gunshot wound of the bladder is discovered during the laparotomy. The bladder should be sutured whenever the condition of the patient and the accessibility of the vesical wound render this possible. Intraperitoneal wounds present no difficulty unless the rent is situated at the bottom of the pouch of Douglas. When suture is deemed too difficult, an adequate suprapubic drainage tube must be instituted with completely ample perivesical drainage to the site of the wound.

An indwelling catheter through the urethra has many drawbacks in the transport and handling of wounded

men and in warfare greatly augments the risk of severe urinary sepsis. When the bladder and pelvic rectum are both wounded, suture of each viscus must be performed. In injuries of the perineal rectum and the extraperitoneal part of the bladder, suture may be very difficult. In such instances adequate perineal, perivesical and suprapubic vesical drainage must be instituted. When stabilization and a more favorable surgical environment occur, a perineal rectovesical repair can be done.

The concussion rupture of the bladder most usually fragments the structure. In such instances all mucosa should be jealously preserved, and great caution should be used in removing any tissues near the rupture. The rapidity with which islands of mucous tissue regenerate and coalesce to form new bladder lining is frequently astounding.

Extraperitoneal wounds of an uncomplicated character produce blood in the urine, difficult urination and extravasation. There may be few symptoms at first, but under observation, if extravasation is occurring, suprapubic discomfort and a palpable mass appear. Wounds occurring in the buttocks, thighs, hips, perineum or genitalia with remote evidence of abdominal symptoms is suggestive of extraperitoneal rupture and should be carefully investigated. In extraperitoneal ruptures the urinary extravasation will follow the fascial planes.

Extravasation from a bladder rent occurring in the front may travel upward between the peritoneum and the abdominal muscles or, if the rent is more posterior, the extravasating urine may dissect extraperitoneally along one or both ureters, forming a bulging palpable mass in one or both flanks. Retrovesical extravasation may pass through the sciatic notch to the buttock, may pass through the obturator foramen to the thigh or follow through the inguinal canal to the scrotum. With infection supervening, fever, leukocytosis and evidence of sepsis quickly follow.

Necessary primary surgical intervention is best carried out at the advanced surgical hospitals at the front. With no evidence of intraperitoneal injury and adequate urinary drainage established, a "hands off" policy may be assumed until the patient reaches a more favorable surgical environment; otherwise, should there be apparent danger of extravasation, expeditious surgical intervention should be instituted by suprapubic tube and adequate regional drainage. The dictum should be supportive treatment and no more immediate surgical intervention than necessary.

THE TRAUMATIC CORD BLADDER

A second and equally distressing problem as it pertains to the bladder in warfare are spinal cord injuries and the bladder sequelae arising from them. Much desultory writing has been presented in urologic literature, with but little attempt at correlation.

Injuries to the spinal cord produce bladder paralysis by severing the continuity of the reflex arc controlling the act of voiding, and consequent urinary retention results. The bladder rapidly distends to such formidable size as to establish fear of rupture. If the injury is above the 11th dorsal segment, an overflow dribbling quite readily occurs; conversely, an injury below this level is likely to establish a spasm of the vesical sphincter. If the problem was merely that of the relief of urinary retention there would be no necessity for discussion. But, as the statistical records of the American and British hospital services in World War I amply testify, the problem is one of urinary tract infections.

The Manual of Military Urology of the American Expeditionary Forces urged a course of nonintervention in these bladders, assuming that the bladder would automatically care for itself (automatic bladder).

Young⁴ states "We have been unable to obtain accurate statistics as to how successful this was. In many instances we find that surgeons ultimately thought it necessary to provide suprapubic drainage or catheterization, intermittent or inlying, in order to relieve great vesical distention. It is impossible for us to find out what success this plan had in ultimately preventing the infection and ascending destruction of the kidneys in these cases."

Early British experience with the same procedure established that eventually 100 per cent of such cases became infected, and especially did those cases become rapidly infected when catheterization was done.

Sir Thompson Walker in his Hunterian lecture reported 450 cases of spinal injuries from which there were 179 deaths due to sepsis following overdistention and catheterization.

In my experience rarely did a patient with a spinal injury arrive at the base without having been catheterized from one to several times, and all with severe sepsis. The patients reaching the base hospital who fared best clinically were those who had had early suprapubic drainage, and even in those already severely infected suprapubic drainage with the attendant increased facility for antisepsis sharply reversed the mortality experience.

With the knowledge of this experience in World War I, a subsequent survey was made of a number of orthopedic and industrial surgeons in the country. Interestingly, every surgeon interviewed voiced the paramount importance of avoiding urinary tract infection, and for this reason, sixty-three surgeons resorted to the establishment of automatic overflow in all cases. Likewise for the same reason, fifty surgeons instituted an immediate continued regimen of intermittent catheterization, thirty-three an indwelling catheter and twenty-nine surgeons instituted an immediate or later permanent suprapubic drainage. Practically no answers could be obtained relatively to mortality from urinary tract infection complications. Only five surgeons stated that it was their practice to handle the complicating condition with a urologist as a consultant. With the knowledge that over 50 per cent of orthopedic and industrial surgeons interviewed in civil life are votaries of some type of catheter drainage and knowing as we do the catheter to be the grand executioner in a great number of these cases, a plea is made for the revival of Sir Thompson Walker's dictum of immediate suprapubic drainage.

Probably the most nearly ideal approach to these cases is detailed by Dr. Clyde Deming⁵ of Yale University Hospital. He states that:

Our procedure for having paralytic bladders due to a fractured spine is to open the bladder with a Kidd cystotome by the suprapubic route and drain as soon as possible.

We see all the paralytic bladder cases which come into our hospital. They are admitted to the orthopedic service, and the fractured vertebra is treated by an orthopedic surgeon. If, however, there is paralysis of the limbs, the patient is examined by the Neurological Service and if there is any indication for neurological surgery this is done by the neurological surgeons, such as decompression of the cord.

4. Young, Hugh H., and Davis, D. M.: *Young's Practice of Urology*, Philadelphia, W. B. Saunders Company, 1926, vol. 2, p. 695.

5. Deming, C. L.: Personal communication to the author, March 30, 1932.

We do not allow these individuals to develop an automatic bladder, as it has been our experience that all of these cases develop infection and that it is much better to drain the bladder before infection takes place, as the drainage can be done in a very aseptic manner without leakage and without much infection later on.

When these cases come to us with infection in the bladder we open and drain them immediately.

We have found that all paralytic bladders heal very nicely if we want them to. Of course, the position of the fracture makes some difference as to the handling of these cases, but we have felt that when a case is to have a long period of paralysis or continued paralysis it is much better to drain the bladder early than wait for infection. In this way, we can handle the cases without kidney infection and keep them in much better general condition.

SUMMARY

1. Wounds of the bladder are usually complicated and extremely dangerous.

2. Restorative procedures and the emergency surgery necessary should be done at front line hospitals, special attention to drainage and to the frequency of intra-peritoneal and intestinal injuries being given.

3. Necessary reparative procedures for complicating conditions and restoring the urinary tract to normal should be done at the base hospital.

4. Urologic consultation should be sought in all cases of cord bladder from spinal injury.

5. The cord bladder as the result of spinal injury should never be catheterized.

6. Previously catheterized and all infected bladders should have immediate suprapubic drainage.

7. In civil practice the experiences of bladder injuries of war can be adopted with great profit.

1015 Sharp Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SCHOLL, MCIVER,
BYWATERS AND MUNGER

DR. W. F. BRAASCH, Rochester, Minn.: The incidence of renal injury in war probably is greater than the records would show. There are many cases with injury to various intra-abdominal organs, including the kidney, which never have been reported. Coincident injury of the kidney occurs most frequently with penetrating lesions of the intestine, liver, lower part of the thorax and the spleen. When it occurs in these cases the usual diagnostic signs and symptoms of renal injury may be of little value. Most of the patients are in shock, and the symptoms caused by lesions in other organs are predominant. The immediate mortality is great. The incidence of penetrating abdominal injury in which only the kidney is involved is comparatively rare. Routine inspection of the urine for evidence of hematuria is imperative in every case of intra-abdominal injury. If the patient cannot void, he should be catheterized. The usual methods of urologic diagnosis, which are available only at general hospitals, are not of much immediate help in many of these cases. Since most of the patients are in shock, the excretory urogram is of little or no value in visualizing the degree of injury. Cystoscopy rarely is indicated. The treatment of nonpenetrating renal injury such as may result from contusion and falls is quite different. With this type of injury the usual methods of investigation and treatment employed in civilian life may be used. Such injuries are not of common occurrence in the armed forces. Profound shock, which usually is observed with multiple intra-abdominal wounds, often is absent in spite of hematuria. Conservative treatment in these cases, as in civilian life, usually is advisable. There may be, however, specific reasons for surgical intervention, such as rapidly extending hematoma, severe pain or physical evidence of extensive renal injury. With every injury involving the lumbar and lateral abdominal areas the urine, voided or catheterized, should be examined. The extent of the renal injury frequently can be determined by a preliminary excretory

urogram. In many cases, however, the urogram will fail to give definite evidence of the extent of the lesion because of obscuring intestinal gas or inadequate visualization. The absence of any visualization of the renal pelvis in the excretory urogram does not mean necessarily that surgical intervention is indicated. Renal injury may be great enough to prevent temporarily excretion of the dye in the affected kidney but, after the reflex influence of injury has passed and the lesion is healed, the renal function may return to normal. If the excretory urogram is a failure and if the patient's condition becomes worse, cystoscopy with retrograde urography is advisable. I am inclined to agree with Sargent that no harm will result to the patient by employing cystoscopy with retrograde urography, and it frequently is the only way in which an exact diagnosis can be made. Necrotic muscle tissues apparently create a substance, probably myohemoglobin, which is highly toxic and damages the excretory renal tissues, causing symptoms of shock and uremia. Dr. Bywaters' statement that shock is not a clinical entity but a syndrome caused by a great variety of conditions would seem to be justified. His observation that serum potassium is increased and that electrocardiographic changes of potassium poisoning occur corroborates those made by Keith, King and Osterberg. Although the clinical data are not parallel, nevertheless the shock and uremia which follow instrumental perforation of the suprapubic or perineal tissues come to the mind of the urologist who has been unfortunate enough to observe such complications. Equally puzzling is the renal deficiency, with uremia, which not infrequently follows loss of a large amount of blood such as may occur with transurethral prostatic resection. In these circumstances usually there is no clinical evidence of shock, nor are there any subjective symptoms of uremia until late. However, the gradually mounting blood urea and the gradually diminishing urinary output indicate the renal lesion. The renal failure is progressive in many of these cases in spite of every effort made to restore renal balance and may terminate fatally; there is no hemoconcentration, nor does there seem to be any potassium imbalance until the later stages of uremia. Nevertheless, postmortem examination of the kidneys reveals a pathologic condition similar to that described by Dr. Bywaters: an acute nephrosis, as though some toxic substance had been liberated into the blood stream and, when excreted in the kidneys, caused profound renal damage.

DR. O. S. LOWSLEY, New York: These papers are particularly well prepared discourses on war injury and effect on the kidneys. Dr. Scholl has given an excellent picture of the pathology, symptoms and diagnosis of injury to the kidney, as well as treatment. He has mentioned the attitude which we take toward patients with a history of trauma to the kidney followed by hematuria. I wish to emphasize that watchful waiting is a much more dangerous procedure than operating under our present excellent aseptic technic, not necessarily because of immediate results but particularly as regards remote damage to the kidney. It has been proved that kidney damage, not necessitating an emergency operation, may result in permanent damage to the kidney, elevation of the blood pressure and great destruction of kidney tissue. With the benefit of ribbon-gut repair of traumatized kidneys proved on animals and human beings, there is no jeopardy to the patient's life by removing the clots and repairing the damage done to the kidney. Draining the kidney pelvis for a period of time will prevent extravasation of urine and subsequent damage to the glomeruli and tubules and thus prevent further damage. Every patient with gunshot wound of the kidney should be operated on as soon as the diagnosis is made. Dr. Bywaters has brought out an important point in connection with the kidneys of persons who have received crushing injuries to other parts of the body. Patients who recovered after such a severe type of injury showed a low urinary output. The first day there would be a rise in the blood urea nitrogen to 60 or even 100 mg. per hundred cubic centimeters; on the second day it will be normal. They are left with unimpaired renal function. Those who are more seriously damaged may have a blood urea nitrogen as high as 400 or 500 mg. per hundred cubic centimeters. On the critical period, on the seventh day, a diuresis occurs and is maintained for several days until the retained nitrogen is entirely secreted. Then the blood pressure falls to normal and the renal function

returns slowly to normal and it may take five months for the urea clearance figures to be normal. Damage to the compressed muscle in such severe cases is never completely repaired. In fatal cases, two thirds of the deaths occurred at the end of the first week, the majority on the sixth day. The potassium level in the serum increases sometimes to more than twice the normal upper level. The pathologic changes in the kidneys show swollen tense structures with foci of tubular necrosis most pronounced in the boundary zone. This damage seems to be due to the precipitation in acid urine with high salt concentration and hematin and subsequent blockage of the tubules. The treatment of such cases, according to Bywaters, consists first of administration of fluid in alkali and the usual treatment of shock in the form of morphine for pain and blood transfusions. Renal failure is treated by the use of diuretics as sodium bicarbonate and concentrated serum. Decapsulation has been advocated and insulin and dextrose may be valuable.

PENICILLIN TREATMENT OF SULFONAMIDE RESISTANT GONOCOCCIC INFECTIONS

IN FEMALE PATIENTS

PRELIMINARY REPORT

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Several publications,¹ have already appeared on the subject of penicillin treatment of sulfonamide resistant gonococcic infections. These reports, however, dealt exclusively with infections in the male. The present report deals with the result of penicillin treatment of sulfonamide resistant gonococcic infections in 44 women.

All of the women included in this study were hospitalized for the purpose of penicillin treatment in the gynecologic service of Bellevue Hospital. After an initial follow-up of at least five clinical and bacteriologic examinations the patients were discharged with instructions to report at the clinic of the Gonococcus Research Unit, Department of Health, City of New York, for further observation.

CLINICAL MATERIAL

Forty-two of the 44 cases had failed to respond to at least 2 courses of 20 Gm. of sulfathiazole. The remaining 2 women had exhibited a definite hypersensitivity to sulfonamide and therefore were given penicillin treatment.

The presence of gonococcic infection was verified by smears and cultures performed at the laboratory of this unit. Infection of the cervix alone was reported

in 12 patients, of the urethra alone in 1 and a concurrent infection of the urethra and cervix in the remaining 31. Involvement of the adnexa was found in 15 patients. Four of the women were pregnant. The average duration of infection prior to penicillin treatment was 92.5 days (maximum nine months, minimum twenty-one days).

TREATMENT

Each 10,000 Oxford units of penicillin was dissolved in 2 cc. of sterile isotonic solution or distilled water. The penicillin was injected intramuscularly in the gluteal region. Injections were repeated at three hour intervals.

DOSAGE

The accompanying table represents the number of patients treated and the amounts of each single dose and the total dosage of penicillin administered at three hour intervals.

RESULTS OF THERAPY

All 44 patients were apparently cured by penicillin treatment. In 1 case, however, a relapse occurred on the second day following the termination of therapy. This patient had received only 50,000 Oxford units of penicillin; she became bacteriologically negative after subsequent treatment with an additional 100,000 Oxford units of penicillin.

Following penicillin treatment, daily clinical and bacteriologic examinations were performed. All the patients showed a reversal of their initial bacteriologic findings from positive to negative within twenty hours after the termination of penicillin therapy. Follow-up at Bellevue Hospital was continued for an average of 7.2 days, and an average of 5.8 bacteriologic examinations were performed on each patient. The additional average follow-up period in the clinic of the Research Unit was 38.4 days, and an average of 3.6 examinations were performed up to date. All the patients followed up (37) remained bacteriologically negative throughout this period.

No significant changes in the amount and character of the cervical discharge after penicillin treatment were observed. However, the urethral discharge in a number of cases decreased or disappeared completely. Among the 15 patients with adnexal involvement the inflammation subsided in 7 and remained the same in 5 others. In the remaining 3 an exacerbation of the adnexal involvement was observed following the use of penicillin. One of the 24 patients without any adnexal disease prior to penicillin treatment developed salpingitis following therapy.

The course of the pregnancy in 4 patients was affected in no way by the penicillin treatment.

Eleven of the 44 patients studied suffered from a concurrent infection with *Trichomonas vaginalis*, which remained entirely unaffected by this type of treatment.

In addition to the penicillin treatment of women there was 1 case of sulfonamide resistant gonococcic vaginitis in a child aged 5 years, who was given four single doses of 10,000 Oxford units of penicillin at three hour intervals (Children's Medical Service of Bellevue Hospital, Dr. James L. Wilson, director). This child promptly became negative and remained negative during a follow-up period of twenty-five days.

TOXICITY

The administration of penicillin in the recorded dosage produced no toxic effects. The only complaint mentioned by nearly all the patients was that following

¹The laboratory work was aided by a grant from the United States Public Health Service.

From the Gonococcus Research, Department of Health, City of New York, and the Obstetrical and Gynecological Service (Third Surgical Division), Bellevue Hospital, and from the Department of Obstetrics and Gynecology, New York University College of Medicine.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutic and Other Agents of the National Research Council.

1. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections, *J. A. M. A.* **122**: 289 (May 29) 1943. Mahoney, J. F.; Ferguson, Charles; Buchholtz, M., and Van Slyke, C. J.: The Use of Penicillin Sodium in the Treatment of Sulfonamide Resistant Gonorrhea in Men, *Am. J. Syph., Gonorr. & Ven. Dis.* **27**: 525, 1943. Van Slyke, C. J.; Arnold, R. C., and Buchholtz, M.: Penicillin Therapy in Sulfonamide Resistant Gonorrhea in Men, *Am. J. Pub. Health* **33**: 1392, 1943.

the penicillin injection numbness or pain radiating from the site of injection in the gluteal region down to the thigh or to the ankle occurred. These symptoms lasted for only a few minutes.

COMMENT

Reviewing the results obtained thus far, it appears that a minimum total dosage of 75,000 Oxford units of penicillin is satisfactory in the treatment of sulfonamide resistant gonococcal infection in the adult female. If this observation is confirmed further, it will be possible to control sulfonamide resistant gonorrhea by one day treatment of ambulatory patients. The single relapse among a group of 9 women, each of whom had received a total dosage of 50,000 Oxford units of penicillin, points to a varying individual susceptibility to this agent. Smaller dosage of penicillin may prove adequate in many cases. This difference in the degree of susceptibility to the therapeutic action of penicillin has also manifested itself in *in vitro* experiments carried out by this unit.²

*Dosage of Penicillin Administered in Various Groups of
Sulfonamide Resistant Gonococcal Infections in
44 Adult Female Patients*

Group	Number of Patients	Single Dose	Number of Injections	Total Dosage
1.....	12	20,000 Oxford units	5 doses	100,000 O. U.
2.....	10	25,000 Oxford units	4 doses	100,000 O. U.
3.....	12	25,000 Oxford units	3 doses	75,000 O. U.
4.....	1	20,000 Oxford units	3 doses	60,000 O. U.
5.....	8	25,000 Oxford units	2 doses	50,000 O. U.
	1*	25,000 Oxford units	2 doses	50,000 O. U.
		25,000 Oxford units	4 doses	100,000 O. U.

* Only failure after total dosage of 50,000 Oxford units; responded to an additional total amount of 100,000 Oxford units.

SUMMARY AND CONCLUSIONS

1. Forty-two adult female gonorrheal patients who did not respond to at least two courses of sulfathiazole were treated with various amounts of penicillin. Two additional infected patients were also given penicillin because they were sensitive to sulfonamides.

2. Forty-three women of the total of 44 promptly became bacteriologically negative after treatment with penicillin and remained negative during the follow-up period.

3. Only 1 of a group of 9 patients showed a relapse following a total dosage of 50,000 Oxford units of penicillin; she responded to an additional total amount of 100,000 Oxford units of penicillin.

4. The bacteriologic reversal from gonococcus positive to negative took place as a rule within twelve hours following the termination of therapy.

5. A total dosage of 75,000 Oxford units of penicillin appears to be satisfactory in the treatment of sulfonamide resistant gonorrhea in the adult female. This therapy may be completed within a period of six hours.

6. A child aged 5 years with a sulfonamide resistant gonococcal vaginitis became bacteriologically negative after a total dosage of 40,000 Oxford units of penicillin.

7. No toxic effects due to the administration of penicillin were observed.

Room 1020, 125 Worth Street.

2. Cohn, A., and Seijo, I.: The *in Vitro* Effect of Penicillin on Sulfonamide Resistant and Sulfonamide Susceptible Strains of Gonococci, to be published.

THE IN VITRO EFFECT OF
PENICILLIN

ON SULFONAMIDE RESISTANT AND SULFONAMIDE
SUSCEPTIBLE STRAINS OF GONOCOCCI

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AND

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The exceptionally powerful inhibitory effect of penicillin on the growth of the gonococcus *in vitro* has already been reported.¹ The current study was undertaken to evaluate these findings and to determine specifically whether or not there was any difference in the antibacterial action of penicillin against sulfonamide resistant and sulfonamide susceptible gonococcus strains. An attempt was also made to study the effect of combined "subtherapeutic" doses of sulfathiazole and penicillin on sulfonamide resistant strains. The object of this experiment was to see whether the combined antibacterial action of these two agents would be effective when the action of each individual agent was not sufficient to kill off the organisms.

TECHNIC

The technic followed in these test tube experiments was identical with that previously described for the *in vitro* differentiation of sulfonamide susceptible and resistant strains, with the only difference that penicillin² was substituted for sulfathiazole.³ The penicillin powder was diluted in sterile distilled water, and from this stock solution serial dilutions were prepared and added to the blood in such a manner that a dilution of 1 cc. of stock solution in 10,000 cc. of blood contained 0.176 Oxford Units per cubic centimeter. The various dilutions of penicillin used were 1:10,000, 1:100,000, 1:200,000, 1:500,000 and 1:1,000,000. In each experiment at least two and usually three or four different dilutions of penicillin were tested simultaneously. Control bloods without penicillin were included in every experiment and always showed satisfactory growth of the organisms.

EFFECT OF PENICILLIN ON SULFONAMIDE RESIS-
TANT AND SUSCEPTIBLE STRAINS

A total of 259 tests were performed on 55 sulfonamide resistant strains, and 132 tests were carried out on 27 sulfonamide susceptible strains. The accompanying table represents the inhibitory effect of the various penicillin dilutions on susceptible and resistant strains. It became obvious that with a 1:10,000 dilution of penicillin all of the sulfonamide susceptible and sulfon-

The laboratory work was aided by a grant from the United States Public Health Service.

From the Gonococcus Research Bureaus of Laboratories and Social Hygiene, Department of Health, City of New York.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for experimental investigations recommended by the Committee on Chemotherapeutic and Other Agents of the National Research Council.

1. Fleming, A.: On the Antibacterial Action of Cultures of a Penicillium, with Special Reference to Their Use in the Isolation of *B. Influenzae*, Brit. J. Exper. Path. 10: 226, 1929. Hobby, G. L.; Meyer, K., and Chaffee, E.: Activity of Penicillin *in Vitro*, Proc. Soc. Exper. Biol. & Med. 50: 277, 1942. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections, J. A. M. A. 122: 289 (May 29) 1943.

2. The penicillin used in these experiments was made available to us through the courtesy of Charles Pfizer & Co., New York. It was packaged in ampules each containing approximately 8,800 Oxford units.

3. Cohn, A., and Seijo, I.: Further Observations on the Correlation Between Clinical and *In Vitro* Reactions of Gonococcus Strains to Sulfathiazole, Am. J. Syph., Gonorr. & Ven. Dis. 27: 301, 1943.

amide resistant strains were killed off. However, as the dilution of the penicillin was increased, sulfonamide susceptible strains showed themselves to be relatively more inhibited by the antibacterial action of penicillin than sulfonamide resistant strains. For example, although a dilution of 1:200,000 killed off 53 per cent of the susceptible strains, it acted against only 38 per cent of the resistant strains tested with this dilution.

VARIATIONS IN INDIVIDUAL STRAINS

The susceptibility of different strains to penicillin was found to vary strikingly, so that some strains survived in a dilution which killed off most of the others and vice versa. A similar observation became evident in our clinical study on sulfonamide resistant gonococcal infections in female patients.⁴

COMBINATION OF SUBTHERAPEUTIC DOSES OF PENICILLIN AND SULFATHIAZOLE

Two sets of experiments were carried out, as follows: In the first, 11 sulfonamide resistant strains were grown in bloods containing both 3 mg. per hundred cubic centimeters of sulfathiazole and penicillin in a dilution of 1:200,000 or 1:500,000. In the second experiment 3 resistant strains were first grown in these same dilutions of penicillin for twenty-four hours and

tests an increase of the antibacterial action of penicillin became apparent, while in six others a decrease of this action was noted.

AGE OF PENICILLIN SOLUTION

Tests were carried out to determine if the aging of stock solution of penicillin kept in the icebox at 4 C. would weaken the in vitro potency of the antibacterial action of penicillin against the gonococcus. The inhibitory effect of serial penicillin dilutions of 1:10,000 to 1:1,000,000 prepared from these stock solutions was tested at weekly intervals for four weeks. The results indicate that, under the conditions mentioned, no essential variation of the potency of the various penicillin dilutions during this interval became noticeable.

SUMMARY

1. In a 1:10,000 dilution of penicillin representing 0.176 Oxford Unit per cubic centimeter all of the sulfonamide susceptible and resistant gonococcus strains were killed off.

2. With increasing dilutions of penicillin, sulfonamide susceptible strains were relatively more inhibited than sulfonamide resistant strains.

3. The susceptibility of different strains to penicillin varies strikingly in different dilutions.

Effect of Penicillin on Sulfonamide Resistant and Sulfonamide Susceptible Gonococcus Strains

Dilution of Penicillin.....		1:10,000		1:100,000		1:200,000		1:500,000		1:1,000,000	
Type of Strain.....	Total Number of Strains Tested	+	0	+	0	+	0	+	0	+	0
Resistant.....	55	Number 20	..	50	3	11	18	4	37	..	16
		Per cent 100	..	91	6	38	62	10	90	..	100
Susceptible.....	27	Number 14	..	26	..	9	8	5	12	1	13
		Per cent 100	..	100	..	43	47	30	70	7	93

- - Antibacterial action. 0 No bacterial action.

then transferred to blood containing 3 mg. per hundred cubic centimeters of sulfathiazole. The growth of the gonococcus strains was not affected in either of the two experiments.

These observations lend further support to the current assumption that the two antibacterial agents attack the organisms in different ways.

DELAYED ADDITION OF PENICILLIN

While in previous experiments the drug effect was studied by adding drug and organisms simultaneously to the blood, the effect of penicillin added after the gonococcus strains were already growing for twenty-four hours was tested in a small series of experiments. The inhibitory effect of two penicillin dilutions (1:10,000 and 1:100,000) respectively on sulfonamide susceptible and resistant strains was found to be about 15 to 20 per cent less than when drug and organisms were added simultaneously.

ADDITION OF PARA-AMINO BENZOIC ACID TO PENICILLIN

The effect of para-amino benzoic acid added to various penicillin dilutions was studied, but no consistent results could be obtained. In the majority of tests performed (forty-two) the antibacterial action of penicillin against both types of strains was the same in the penicillin blood alone as in the penicillin blood containing para-amino benzoic acid. In seventeen other

4. The growth of sulfonamide resistant strains was not affected by the combination of "subtherapeutic" doses of penicillin and sulfathiazole.

5. The addition of para-amino benzoic acid to various penicillin dilutions did not yield consistent results as to the growth effect on the gonococcus strains.

6. The antibacterial action of dilutions of penicillin obtained from stock solutions which were kept for four weeks at icebox temperatures and tested at weekly intervals did not reveal any essential variation of its potency.

Room 1020, 125 Worth Street.

Medical Science and Irrational Fears.—In the matter of freedom from the fear of many epidemics, such as smallpox, the black death, yellow fever, diphtheria and typhoid, medical science has largely conquered helpless and irrational fear. Today fears of cancer, poliomyelitis, heart disease are widespread, but when their causes are more fully and generally known irrational fears will be relieved, even if their prevention and cure have not been solved. For example, in the epidemic of infantile paralysis in 1916 many towns and villages established shotgun quarantine against all transportation of persons under 16 years of age. In the 1890's similar quarantines were set up against all persons coming from yellow fever districts. Medical science has in large part removed such irrational fears even if it has not established unailing cures of these diseases or means of their prevention. We fear most those things which are mysterious, "the pestilence that walketh in darkness," the causes of which are unknown.—Conklin, Edwin G.: "The Doctor's Dilemma" of Medical Ethics in Peace and War, *Science* 99:187 (March 10) 1944.

4. Cohn, A.; Studdiford, W. E., and Grunstein, I.: Penicillin Treatment of Sulfonamide Resistant Gonococcal Infections in Female Patients: Preliminary Report to be published.

Clinical Notes, Suggestions and New Instruments

A RAPID TREATMENT FOR SCABIES

LIEUTENANT (Jg) ALBERT H. SLEPYAN, MC-V(S), U.S.N.R.

Scabies, by its annoying and distracting itch, is the source of considerable wartime disability. All modern methods of treatment of scabies have as their ultimate aim the use of a substance easily applied, rapidly lethal to mites and eggs and nonirritating to the skin. This aim is now an urgent wartime goal, since the saving of sick days means more men at more guns. It is with this purpose in mind that the procedures here described were instituted at the U. S. Naval Training Station, Great Lakes, and Camp McIntire Dispensary.

Kissmeyer¹ in 1937 reported on Nielsen's rapid ambulatory treatment for scabies. He used benzyl benzoate, soft soap (B. P. 1932) and isopropyl alcohol of each equal parts. In 1942 Mellanby and his associates² applied the benzyl benzoate lotion with and without the bath and found the treatment 100 per cent effective. They concluded that benzyl benzoate was rapidly lethal to mites, which are killed within five minutes of contact away from the body. Roxburgh,³ making use of the newer wetting agents, using a 25 per cent solution of benzyl benzoate as an emulsion in water, using 2 per cent Lanette Wax SX. From the materials readily available the type of lotion presented in table 1 was derived and found most suitable.

The benzyl benzoate is gently poured over the Duponol C in the bottom of a jug.⁴ To this the 2.5 per cent aqueous solution of bentonite is added slowly without shaking. The emulsion is then agitated until all of the wetting agent is dissolved.

TECHNIC

On admission to sick bay the following routine was followed:

1. Remove all clothing, put in bag, either autoclave or send to laundry.
2. Shower, using soap freely. Scrub, with particular attention, the involved areas.
3. Paint entire body from ear-chin line down, covering all folds of body. Use paint brush with long firm bristles.
4. Let dry on skin. Repeat painting in five minutes.
5. Put to bed. Cover with at least two blankets, or sufficient to make patient warm. Keep in bed for four hours.
6. Shower, dry well. Apply calamine ointment if any irritation is noted.
7. Clean clothes.
8. Return to duty with instructions to patient to report for follow-up examinations.

Before the formula and technic were arrived at, the patients (group 1) were painted with equal parts of benzyl benzoate, soft soap, alcohol and water. Each patient was given three paintings at four hour intervals, put to bed for four hours, showered and sent to duty. This treatment, although 100 per cent effective, in all those followed fourteen days or longer, was disagreeable in several respects. The paintings were associated with considerable smarting and burning and a varying degree of irritant dermatitis, most bothersome about the scrotum,

which appeared shellacked after the first painting, resulting in desquamation of the skin of the penis and scrotum by the end of the tenth day.

Two patients who complained of swelling and edema of the penis required treatment with cold wet packs for a day before being fit for duty.

It was apparent that the alcoholic soap mixture produced too much post-treatment pruritus. A lotion making use of a wetting agent as an emulsifier³ was then tried (table 1).

Patients (group 2) were treated with the same routine as group 1. Smarting and burning were conspicuously diminished with this lotion. Although the post-treatment irritant dermatitis was diminished there was considerable dryness of the skin, particularly of the thighs, upper arms, lateral sides of the abdomen and the scrotum, necessitating soothing emollients at night. When this routine was found as effective as that of group 1, a third group, group 3, was started on a five hour routine. This proved most satisfactory. The irritant dermatitis was minimal and the efficacy was maintained (table 2).

In all three groups the patients were observed routinely on the third, seventh and fourteenth days after treatment. Those with simple pyodermic lesions were treated as for uncomplicated scabies. Most all of those cases responded to the paintings without further treatment; a few were given a 3 per cent ammoniated mercury ointment for several nights.

TABLE 1.—Lotion

	Gm. or Cc.
Benzyl benzoate	250
Duponol C	20
Aqua bentonite.....	sufficient to make 1,000

TABLE 2.—Results

	Group 1	Group 2	Group 3
Number of patients treated.....	115	55	216
Number observed at least 14 days....	44	35	68
Number observed at least 21 days....	28	4	10
Median of days observed.....	19	15	17
Number of recurrences of symptoms..	none	none	none

It is noteworthy that a goodly number observed between the fourteenth and twenty-eighth day exhibited relics of the infestation; namely, involuting papules, crusts, scars and pigmentation. These residuums at times superficially suggest recurrences; however, repeated potassium hydroxide preparations were negative. Further observation substantiated the fact that only the relics remained.

Four men were seen on the third day after treatment complaining of isolated new vesicles appearing on the webs of the fingers. A vesicle was removed and a sodium hydroxide preparation was examined. In each instance an egg was found undergoing what appeared to be fatty degeneration. The capsule was well defined, while the contents contained pycnotic, mosaic-like dark masses. Several of the vesicles were marked and observed on the tenth day and found dried and no longer pruritic. The parasitic remains found in scraping these areas were further shrunken.

Two patients were concurrently infected with pediculosis pubis. One of them had involvement of the axillary and abdominal hair. The treatment was gratifying in stopping the itching. No live pediculi could be found after the treatment. On the third, seventh and fourteenth day visits nits were plentiful but could be easily slid off the hairs. Twenty-one days after treatment there were no signs of parasitic infection. It was interesting to note that under the microscope the pediculus was killed almost immediately on being engulfed with a drop of the scabies lotion.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

1. Kissmeyer, A.: A Rapid Ambulatory Treatment of Scabies, *Lancet* 1: 21 (Jan. 2) 1937.

2. Mellanby, K.; Johnson, C. G., and Bartley, W. C.: Treatment of Scabies, *Brit. M. J.* 2: 1 (July 4) 1942.

3. Roxburgh, A. C.: Treatment of Scabies, *Practitioner* 149: 228 (Oct.) 1942.

4. Duponol C is obtainable from E. I. du Pont de Nemours, Wilmington, Del. This product contains several alcohol sulfates, chiefly lauryl sodium sulfate, some myristol sodium sulfate, cetyl sodium sulfate and sarcyl sodium sulfate.

SUMMARY

A clean, simple, nonirritating five hour treatment for scabies has been developed. The time of the treatment has been reduced and the efficacy maintained. The use of benzyl benzoate as a scabicide is well established. Of the 189 patients followed longer than fourteen days, no recurrences were noticed. The lotion presented suggests further trial on patients with pediculosis pubis.

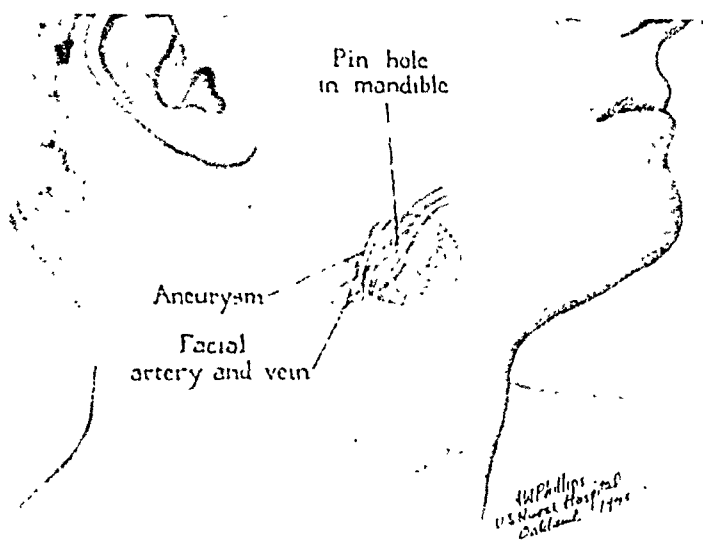
ARTERIOVENOUS ANEURYSM RESULTING FROM APPLICATION OF ROGER ANDERSON SPLINT

LIEUTENANT COMMANDER PAUL W. GREFLEY (MC), U.S.N.R.
AND

LIEUTENANT ALBERT H. THRONDSOEN (DC), U.S.N.R.

While it is admitted readily that the use of external pin fixation has a definite place in the management of fractures of the mandible, certain potential complications in its technical application may be overlooked. A patient recently under our care demonstrates a complication that we feel should be recorded.

A man suffered an oblique fracture through the right angle of his mandible. An early reduction was performed and the teeth were wired in occlusion. Because the mandible was eden-



Location of thrombotic arteriovenous aneurysm.

tulous posteriorly a Roger Anderson external pin fixation splint was substituted to stabilize the posterior fragment in the reduced position. The wires were removed after partial union to permit early motion and use.

At the time of application of the splint, one of the pins accidentally injured the underlying facial artery and vein. An immediate swelling developed that pulsated. The mass grew quickly to the size of a walnut. Pulsation continued for about one month, following which the mass gradually solidified but remained approximately the same size.

The splint was removed six weeks after application with evidence of good union at the fracture site. Three weeks later the tumor was explored. A thrombotic arteriovenous aneurysm was encountered, which was removed by resection between the ligated proximal and distal ends of the facial artery and vein. An uneventful convalescence followed its removal.

We feel that thoughtful preoperative planning will readily eliminate the likelihood of the future occurrence of this complication in the management of mandibular fractures. It should also be pointed out that the same principles should be observed in using external pin fixation apparatus in the treatment of fractures elsewhere in the body.

From the U. S. Naval Hospital, Oakland, Calif.

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Special Article

AMERICAN HEALTH RESORTS

THALASSOTHERAPY

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AND

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These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.

Thalassotherapy is the utilization of ocean climate in preventing and treating disease.

Like many other sciences, it has gone through several phases of development from the empirical to the present day objective analytic research. The old Greek and Roman curators administered sea water as a laxative and used it in skin diseases. There are a few vague statements in Hippocrates as to the effectiveness of its external application in the form of showers and affusions; Plinius, Avicenna and later Savonarola made passing reference to the therapeutic use of sea water.

Richard Russell of England was the first to advocate sea bathing as a form of treatment in the mideighteenth century; fortunately he was able to persuade the reigning monarch to submit himself to "the cure." As a result, Brighton mushroomed as a fashionable seaside resort. In 1791 the Royal Sea Bathing Hospital was founded in Margate, England. Following the English rediscovery of therapeutic ocean bathing, colorful one man crusades for its general adoption were led in Europe by Barellai of Italy, Petrochaud of France and Benecke of Germany. These were the founding fathers of thalassotherapy, brought to its height of development in recent years by Haeberlin,¹ Kestner,² Krauel, Schaeke,³ and their co-workers in Germany.

In prewar Europe, hundreds of seashore sanatoriums with thousands of beds were located along the irregular coast line of Europe. Belgium, a small country with a seashore line 40 miles long, had over forty sanatoriums with 3,500 beds—a sanatorium on each mile of the seashore. The United States with 6,000 miles of coast line boasts but three noteworthy institutions—one each in Connecticut, New York and New Jersey.

An estimated 20 million people each year use the American seashore as a vacation ground without any planned climatic exposure or supervised daily regimen. This presents remarkable potentialities for future scientific development.

In order to discuss climatotherapy scientifically one must get acquainted with (1) the physical properties of the climate, (2) their biologic effect on the human organism and (3) their controlled application.

1. Haeberlin, Carl: *Heilquellen und Heilklima*, Steinkopf Verlag, 1934, pp. 190-199.

2. Kestner, O.: *Handbuch der normalen und pathologischen Physiologie* 17: 498, 1926.

3. Schaeke, E.: *Lehrbuch der Meeres Heilkunde*, Berlin, Urban & Swarzenberg, 1935.

CLIMATIC PHYSICS

Climate is the sum total of meteorologic phenomena that characterize the average state of the atmosphere; it is a long range view on weather. Geographically, one distinguishes between arctic, temperate and tropical climates. Of geologic importance are high altitude, desert and seashore climates.

The vicinity of the ocean may have an influence on weather changes in an area extending 50 miles or more inland (maritime zone). In a smaller zone (up to 4 to 6 miles inland) the cooling effect of sea breezes can be generally felt (marine zone). Biologically the most important area is the vicinity of the beaches 50 to 100 yards from the water line. The latter, called the pelagic zone, is the one in which all the seashore climatic factors are most effective.

The three leading seashore climatic factors, each a complexity in itself, are air, sun and water.

Air.—"The sea air should be looked upon as remedy in itself," says Churchill's Medical Directory. "How a change of air can profoundly modify breathing, circulation, metabolism, cannot at present be explained, but many delicate children and invalids are as sensitive to the quality of air as are plants."

TABLE 1.—Pollen at Mitchel Field and at Long Beach

	Mitchel Field, L. I.	Distance 12 miles	Long Beach, L. I.
5,000 feet.....	6 pollens		33 pollens
4,000 feet.....	32 pollens		26 pollens
3,000 feet.....	28 pollens		12 pollens
2,000 feet.....	96 pollens		34 pollens
1,000 feet.....	74 pollens		97 pollens
750 feet.....	128 pollens		42 pollens
500 feet.....	116 pollens		102 pollens
250 feet.....	84 pollens		22 pollens
24 hour ground exposure.....	36 pollens		17 pollens

A satisfactory explanation of this statement can be found in an analysis of the qualities of sea air:

1. High oxygen content: 20.99 against 20.76 per cent in the continental air.
2. Relative freedom from dust, pollen, allergens, carbon monoxide and gaseous products of combustion.
3. High barometric pressure.

The sea breeze is an important feature of the summer along the seashore. It is a wind aroused and maintained by the difference of temperature between the inland and the ocean surfaces. It reduces the daily fluctuation of temperature by moderating the midday heat. It reaches shore in the middle of the forenoon with a velocity of 10 to 40 miles per hour and reduces the midday heat by 10 to 15 degrees Fahrenheit. It whips away fine, minute water particles from the crests of the waves breaking on the sand bars of the seashore. It carries this mist, containing chlorides, bromides, iodides in traces, about 50 to 100 yards inland (pelagic zone). The sea breeze maintains a sufficient degree of humidity, which seldom exceeds 75 per cent. The sea breeze is a powerful natural air conditioning mechanism of the seashore, purifying the air, producing desirable thermal equability and maintaining a convenient degree of humidity.

The iodine content of the sea air was determined on several occasions in Long Beach, N. Y., by a test sensitive to 10 micrograms per hundred cubic centimeters of iodide present. Filter papers which were exposed to the sea breeze in a circular frame 8 inches in diameter

contained 0.374 to 0.778 mg. of iodides at the end of twenty-four hours. The amount of iodides varied according to the heaviness of the surf and according to the velocity of the oceanic breezes which whip away fine sea water droplets from the wave crests. This phenomenon is a plausible factor in the apparent rarity of endemic goiter at seashores.

The pollen distribution in different air strata was determined above Long Beach, L. I., and Mitchel Field, L. I., on Sept. 22, 1936 with five minute airplane exposures. The results are shown in chart 2 and table 1.

Sun.—There is a distinct difference in the qualities of sunshine on seashores as compared with sunshine elsewhere. This difference is caused by the reflection of radiation from the water surface and the beach sand.

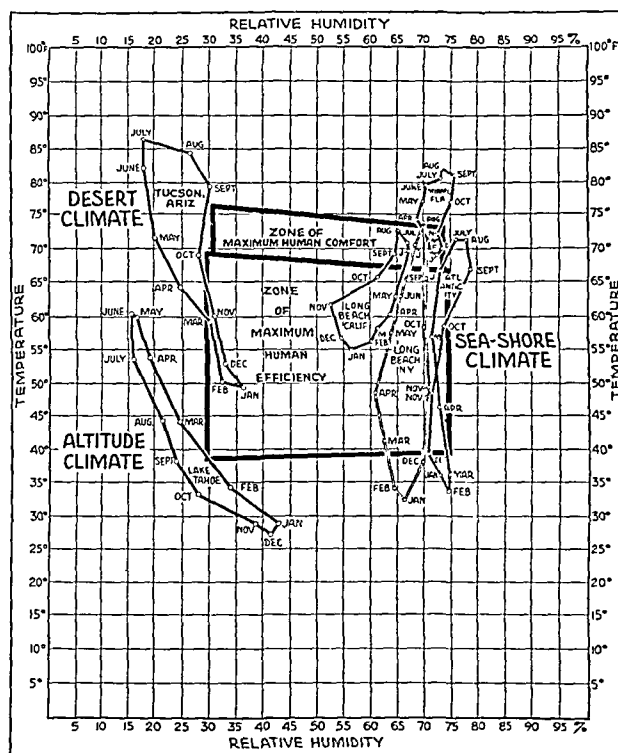


Chart 1.—Comparative climatogram. The climatogram, which covers all possible combinations of temperature in degrees Fahrenheit and relative humidity (per cent saturation), has projected on it the zone of maximum human comfort and the zone of maximum human efficiency. Silhouetted against these zones are the monthly temperature averages and the humidity averages of different localities representative of different climatic types. Characteristic types of climate represented are: Seashore climate: (a) Northern temperature: Long Beach, N. Y.; Atlantic City, N. J. (b) Southern temperature: Long Beach, Calif. (c) Subtropical: Miami, Fla. Desert climate: Tucson, Ariz. High altitude climate: Lake Tahoe, Nev.

The wide open spaces on the shore allow the full action of skylight radiation, which on partly cloudy days exceeds the amount of direct radiation. Campbell gives the same importance to the radiation from the ocean surface—the sea shine. Sandy beaches also produce reflex glare.

The humidity of the atmosphere does not weaken the biologically important wavelengths around 300 millimicrons, nor are they much lessened by dust, soot or oxidizable organic matter in the relatively pure air masses above the ocean. Quite the opposite happens to the rays arriving in longer wavelengths. Infra-red

rays are decidedly swallowed by the humidity. It is due to this phenomenon that the solar radiation of sea-shores is relatively cooler than the sunshine of high altitudes, which penetrates only dry air masses and loses little of its infra-red content. The mountain sunshine forewarns of ultraviolet damage by its warmth; the ocean sun fails to do so (Phillips).

Water.—Sea water is a compound salt solution of 2 to 4 per cent concentration containing mainly sodium chloride and potassium. It also contains magnesium, calcium, bromide, iron, phosphate, iodine, arsenic and strontium in traces. As it has been proved that no absorption of these mineral contents occurs, even with prolonged bathing, the effects of sea bathing must be attributed to (1) the temperature of the water, (2) the difference between the temperature of the skin and that of the water, (3) counterirritation of the skin by the salt content of the water, (4) mechanical stimulation by the waves of the surf, (5) degrees of exposure after bathing, (6) temperature and humidity of the air and (7) velocity of the sea breeze.

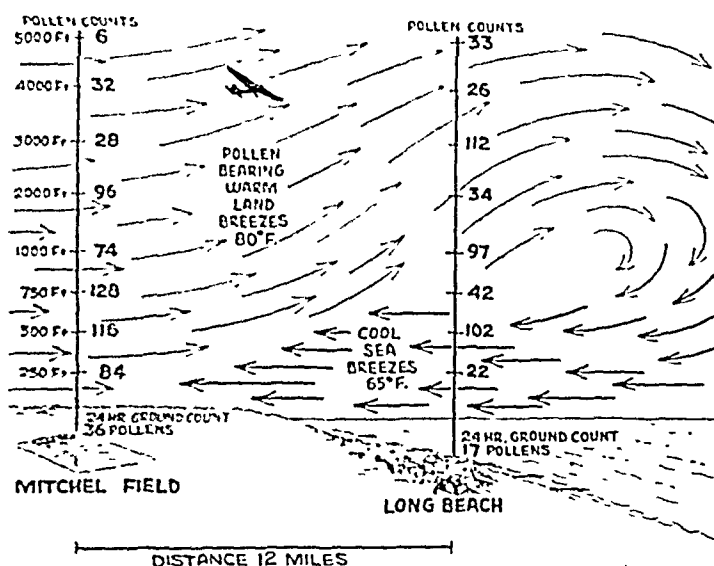


Chart 2.—Pollen distribution in different air strata above Long Beach, L. I., and Mitchel Field, L. I., on Sept. 15, 1936, as determined after five minute airplane exposures. Pollen counts are lower on sea level than in the altitudes. Pollen counts are lower on seashore than inland. The relatively low pollen count on sandy seashores is to be explained in four ways: 1. The cool sea breeze, blowing with a velocity of 12 to 18 miles, deflects the pollen bearing warm land breezes to higher altitudes; this is the chimney phenomenon. 2. The sea mist above the ocean surface completes the filtering of land burden breezes, which after depositing their pollen burden far out into the ocean return in the form of sea breezes. 3. There is a scarcity of vegetation on sandy beaches. 4. Flat seashores usually have marshy backgrounds without pollen-producing vegetation.

Minor Factors.—There are several minor factors cooperating in the marine cure—for instance, the iodine content of the air and the drinking water. The minor climatic factors, as the somewhat increased oxygen content of the air, the ozonization and the increased negative ionization, seem to be negligible, but one must consider that during a sojourn of eight to twelve weeks at the seashore the system constantly is exposed to the simultaneous effects of these factors.

CLIMATIC BIOLOGY

The biologic effect of a climate on the human organism depends mainly on its heat absorbing capacity. This heat absorbing capacity (expressed in calory square centimeter minutes) is influenced by a complexity of coeffective factors in the atmosphere. These factors are temperature, humidity, winds, barometric pressure and sunshine intensity.

Fundamentally, climatotherapy is the planned and supervised exposure to an atmosphere with a heat absorbing capacity different from that of the original habitat. This is reinforced by judicious application of heliotherapy and hydrotherapy.

Every human being has his own individual comfort zone within the range of which while resting and normally clothed he does not perspire and is not chilled. He feels comfortable when his production of heat is in equilibrium with the heat absorbing capacity of the environment.

If the heat absorbing capacity of the seashore is higher than that of the habitat of the person arriving, the climatic change will have a stimulating effect; if it is lower, a sedative effect.

The biologic effects of a stimulating climate result in increased conservation of heat and increased production of heat. This is effected by heightened cutaneous vascular tone and elevation of the basal metabolic rate. Sedative climates produce the opposite: vasomotor and metabolic relaxation.

Cutaneous Effects.—Life in cities, with its lack of exposure to open air and sunshine, and the heating and clothing of modern life harm the physical heat regulation. The skin becomes "domesticated." It loses its faculty for dodging sudden intensive changes in temperature by tonic contraction of the blood vessels of the skin—the physical regulation of heat. This mechanism has to render the well reacting skin similar to a poorly heat conductive leather coat. On confronting sudden changes of temperature the blood vessels of the domesticated skin give up their tone, the inner temperature drops, the person shivers and may catch cold. More than 50 per cent of the children newly arrived at the seashore react in this manner; after only six weeks at the seashore, less than 25 per cent. The lost regulation of heat is regained. The skin becomes acclimated, hardened. The temperature of the skin of these hardened children drops sharply, while their rectal temperature stays constant or increases after a sea bath.

The ice cube test reliably reflects the improvement in the thermic reacting ability of the skin during acclimatization.

The pigment changes (tanning) and the ergosterol production of the skin under the influence of solar exposure are well established facts. Histamine-like substances produced by the skin increase in the blood stream on exposure to cold. Their plausible purpose is to counteract the initial rise in blood pressure on the sudden dip in environmental temperature (open air exposure, bathing).

Effects on Mucous Membranes and Respiration.—The dust, soot and acrid impurities of the city air are missing at the seashore, which undoubtedly lowers the bronchiolar contraction, a reflex maintained by vagus effect. The relatively high degree of humidity in the sea air eases the activity of the ciliary epithelium in removing mucus and impurities. As a result, the flat, rapid breathing of the city dweller becomes deeper and slower. The vital capacity of the lungs of city children observed on seashores (Haerberlin, Singer) increased by about 500 cc. and the chest expansion up to 1½ to 3 inches after a two months vacation at the seashore.

First to be affected by external stimulation, the skin and mucous membranes represent the "receptor" organs of climatic change. The "conductors" of environmental influences from the skin and the mucous linings to central organs (the hemopoietic system and the

endocrine system) are the autonomous nervous system and the blood.

The existence of autonomous imbalance, the prevalence of vagotonia in domesticated newcomers at the seashore, the shift toward sympathicotonia after a few weeks of climatic stimulation can be demonstrated by biologic tests and by pharmacodynamic methods such as the oculocardiac reflex, Erben's test, the epinephrine pressor effect and the modified Muck test.

The role of the main regulator, that of "the pace-maker" controlling the process of acclimatization, has to be conceded to the endocrine system.

The sojourn at temperate seashores in the summer and fall and at southern shores in the winter and spring has a sedative effect. Open air exposure and especially ocean bathing sharply increase the metabolic rate and have to be considered stimulating. To illustrate this statement, the production and consumption of energy in some common occurrences at the seashore will be expressed in calories:

1. The energy producing level of an adult resting lightly dressed in an environmental temperature of 20 C. (68 F.) is about 100 kilocalories per hour.

2. The same person produces about 300 kilocalories per hour, walking with a speed of 4 miles per hour.

3. A 12 mile sea breeze of 20 C. temperature would absorb about 300 kilocalories per hour from the skin of the same (undressed) adult. He would shiver soon if vasoconstriction of the skin did not protect him.

4. As the heat conductivity of the water is twenty-three times as much as that of the air, ten minutes bathing would absorb about 400 kilocalories from the body if prompt vasomotor reaction of the skin did not sharply reduce this loss of heat.

Besides this easily demonstrable metabolic increase governed by the thyroid gland there are several other observations to indicate accentuated activity of the endocrine system; for example:

(a) Relatively sporadic occurrence of goiter at seashores.

(b) Latent toxic goiters becoming manifest as a result of excessive exposure to highly stimulating climatic effects.

(c) Delayed menses in young girls on climatic change (Haeblerlin).

(d) Spontaneous improvements in the dysmenorrhea of adult females often encountered on seashore vacations.

(e) Fluctuations of the blood sugar level of the healthy adult in the first few weeks on seashore.

(f) Increased hexosuria in diabetic persons after prolonged ocean bathing.

Hematologic Changes on Climatic Stimulation.—Changes in the blood during thalassotherapy reported by German,² French⁴ and Italian⁵ observers are somewhat contradictory. From their data reinforced by the observations of one of us (Singer) on a large group of children and on healthy adults the conclusions given in table 2 can be drawn.

During the first few weeks of a seashore sojourn, especially with exposure to air and surf bathing, definite hematologic changes can be observed with apparent regularity (acclimatization phase). In case of over-exposure to cool air and with prolonged and frequent ocean bathing this blood change will become exaggerated and will be accompanied by headache, malaise, nervous irritability, loss of sleep and appetite, and by a possible

flare-up of dormant chronic inflammations (negative phase, supersaturation, bath reaction).

Complete acclimatization is noted by a reversal of the hematologic findings of the first few weeks of climatic therapy. An increased stability in cell count and blood chemistry characterizes this postacclimatization phase. Even excessive exposures will fail to elicit a negative phase at this stage of sojourn (stabilization phase).

THALASSOTHERAPY

Rationale.—Medically we distinguish two types of climate: the stimulating and the sedative or protective climate. We consider a winter climate of a given locality to be sedative if its mean monthly temperature is above 55 F., enabling an all year round outdoor existence. Floridian and southern Californian shores fulfill this requirement. A winter sojourn on any other

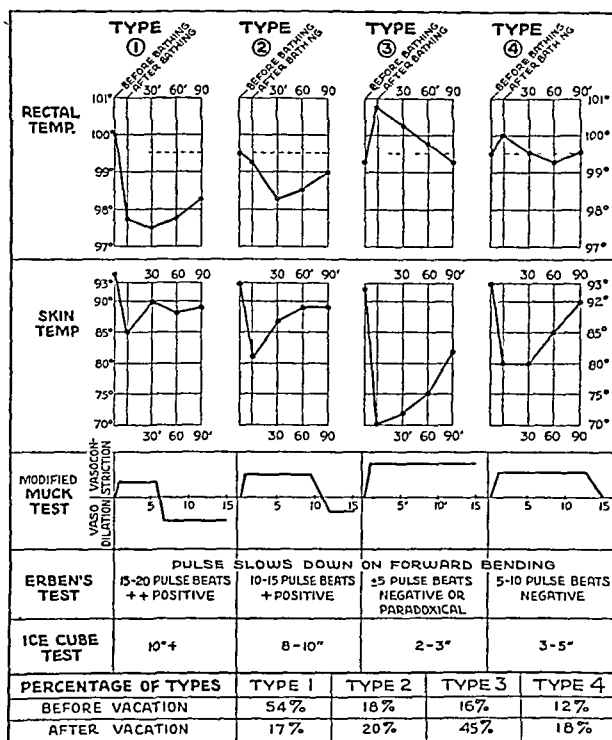


Chart 3—Systemic reactions to thalassotherapy: Type 1. Failure of the physical heat regulation. Domestication; relative vagotonia. Type 2. Transitional reaction type. Partial loss of heat regulation. Type 3. Corrected heat regulation. Relative sympathicotonia. Type 4. Ideal form of reaction: High autonomous stability.

Modified Muck Test. A 1:1,000 epinephrine solution is applied topically by means of an atomizer on the lower turbinate and septum on one side of the nose. In the blanched area a mechanical irritation is caused by scratching the area on a 1/2 inch long line with a blunt sound. The consecutive reactions are timed and recorded. Typical personal reactions: 1. Diffuse vasoconstriction (blanching) within thirty to sixty seconds. 2. Duration of vasoconstriction five to six minutes. 3. Reactive vasodilatation (reddening). 4. Red streak on the site of the mechanical irritation appearing usually one to two minutes earlier than the generalized vasodilatation. 5. Diffuse vasodilatation generally lasting more than ten minutes. Typical after season reactions: 1. Diffuse vasoconstriction within a half minute. 2. Duration of vasoconstriction ten minutes or more. 3. Occasionally a faint red streak starting at a later stage of observation. 4. Appearance of a white streak in the blanched zone, sometimes preceded by the aforementioned faint red streak. Persons displaying vasomotor rhinitis, hay fever and acute colds are not suitable subjects for this test. Whether this modified Muck test could be considered as a yardstick of the prevailing sympathicotonia and thus a possible indicator of the degree of the acclimatization cannot be definitely stated as yet.

Ice Cube Test. Delayed local hyperemia appearing later than ten seconds after two seconds' contact with an ice cube indicates poor thermoreacting ability of the skin.

American seashore is more or less stimulating. The summer on any seashore has protective, sedative qualities. Open air exposure and sun bathing are strong stimulating influences.

4 Picry, M. *Traite de climatologie biologique et médicale*, Paris, Masson & Cie 2: 905 1001, 1934.

5 Scerif, A. *Blood Changes in Marine Climate on the Adriatic*, Riv. idroclimat., talassol. e terap. fis. 48: 333 338, 1937.

The two main forms of thalassotherapy are (1) a sojourn in an ocean climate by (a) a stay of six to eight weeks at the seashore or (b) a prolonged ocean trip; (2) selective utilization of climatic factors under partial or complete (institutional) supervision.

The modalities of thalassotherapy are (1) sun, air, surf bathing and outdoor exercise; (2) brine baths or concentrated sea water baths for the treatment of scrofulosis and chronic inflammation of the female pelvis; (3) baths in heated sea water; (4) baths and packs with sea mud (liman) for the local treatment of chronic arthritis and fibrositis.

Under medical supervision climatic therapy can be coordinated with or molded into any form of physical, medical or surgical therapy, for example: (1) a mineral water regimen in gastrointestinal disorders; (2) inhalation therapy in chronic bronchial conditions; (3) surgical and orthopedic management of bone and peritoneal tuberculosis on seashores.

Medical science does not know of an actual optimal climate.

Indications and Contraindications.—The indications and contraindications of a given climate vary according to (1) season, (2) age, condition and constitution of the patient and (3) nature and stage of the chronic disorder to be influenced.

During the process of adaptation to a stimulating climate extensive fluctuations take place in the neurovascular, chemical and endocrine balance of the human system. A new threefold balance has to be found—adaptation to the environmental change. During this reorganization different preexisting chronic disorders of the system may be influenced—possibly eliminated.

The main biologic indications of the two medical types of climate are presented in table 3.

The majority of observers of seashore climatic effects agree that the following clinical conditions are beneficially influenced on seashores: In children: (1) chronic catarrhal processes of the upper respiratory tract and convalescence from influenza, pneumonia or whooping cough; (2) tuberculous involvement of cervical, bronchial and mesenteric glands and tuberculosis of bones, joints or the peritoneum; (3) constitutional imbalance (general debility and retarded development,

As to contraindications, there are practically none for sojourn at the southern seashores in any season. The same can be stated for temperate seashores in the summer and fall. The excessive stimulation present in the climate of northern shores, the strongly irritative factors in the stormy late winter of northern temperate

TABLE 3.—Indications of Two Types of Climate

Climatic Sedation on Seashores	Climatic Stimulation on Seashores
The climatic sedation is a good protective therapeutic measure. Its chief indications are:	Its chief indications are a large array of chronic diseases whose correction requires.
1. Constitutional defects (a) In the feeble aged (b) In the delicate child	1. Stimulation of the hemopoietic organs
2. Debilitating diseases, especially in persons whose constitution displays vasomotor or endocrine instability (a) Rheumatic heart disease (b) Chronic nephritis (c) Rheumatoid arthritis	2. Increased basal and mineral metabolism 3. Improved breathing mechanism 4. More effective physical heat regulation
	To be effective, climatic stimulation must be optimal in amount, avoiding ineffective underexposure and harmful overexposure

shores and surf bathing on any shore or in any season are contraindicated in (1) pulmonary tuberculosis, (2) hyperthyroidism, (3) severe neurosis and vasomotor disorders, (4) peripheral vascular diseases, (5) severe myocardial damage and (6) acute and subacute arthritis.

Failures for thalassotherapy can be ascribed to (1) faulty selection of the place or of the season, (2) disregard of contraindications, (3) insufficient exposure to climatic influences, (4) overstimulation of supersaturation and (5) poor habits of living continued at the seashore.

The following few suggestions are offered to enable avoidance of some common mistakes: The sojourn in southern climates necessitated by cardiovascular diseases should be planned to last through the whole winter. On returning to the north, it seems to be advisable to reduce the abruptness of climatic change by a few days stay in the pine belt of the Carolinas or in Virginia. On the last three days of a short southern vacation, extensive exposure to solar radiation is inadvisable as the resulting erythema will interfere with the heat regulating vasomotor mechanism of the skin on returning to the north. The negative phase (supersaturation) can be controlled by two days of complete rest and 2 or 3 grains (0.13 to 0.2 Gm.) of quinine plus 5 grains (0.32 Gm.) of bromides administered three times daily.

Thalassotherapy can be utilized to its optimal advantage only by cooperation between the physician of the city and the physician at the seashore. Whether climatic stimulation or sedation is needed, the family physician is the one who most probably will have to select the new climatic environment. In so doing he has to take into consideration the condition, the constitution and the social and financial background of the patient. One of his most important obligations to his patient is to provide him with the name and address of a reputable medical man on the site of the prospective vacation. Lastly he should provide the patient with a chart of the case history containing sufficient data to enable the recipient physician to comprehend the medical problem of the migrant. This medical identification card, this scientific passport will be useful in the vacation guidance, in the planning of therapy and in an emergency. The recipient specialist or general prac-

TABLE 2.—Changes in the Blood During Thalassotherapy

	Acclimatization Phase, First 2 to 4 Weeks	Stabilization Phase, Post- acclimatization
1. Red cell count	Increase	Stable
2. Hemoglobin	Increase	Stable
3. White cell count	Increase	Decrease
4. Ratio: leukocytes to lymphocytes . .	Increase	Decrease
5. Eosinophils	No change	Decrease
6. Blood calcium	Increase	Decrease
7. Blood sugar	Increase	Decrease
8. Carbon dioxide combining power . .	Decrease	Increase
9. Sedimentation rate	Increase	Decrease

exudative diathesis, hypothyroidism, rickets); (4) microcytic types of anemia; (5) functional digestive and nervous disorders, or vagotonia. In adults: (1) convalescence; (2) nervous exhaustion; (3) chronic inflammations of the upper respiratory tract; (4) asthma or hay fever; (5) surgical tuberculosis; (6) chronic arthritis. In aged persons: (1) arteriosclerosis and hypertension; (2) chronic arthritis; (3) chronic bronchitis.

itioner should try his utmost to cooperate with the sender in acknowledging the arrival of the patient, giving his impressions of the case and outlining the therapy to be instituted. This friendly cooperation will enhance the after-care and will enable that long range planning which is so important in the treatment of the chronically sick. In this long range planning climatic therapy plays an important role.

Military and Public Health Importance of Thalassotherapy.—At a time when the utilization of every source of manpower is of extreme importance to the nation, thalassotherapy has a definite role in the war effort, first as an aid in military training through the "hardening" attained by surf bathing, second in the speedy rehabilitation of convalescent soldiers and third as an aid to bringing up to par persons with minor defects, i. e. secondary anemia, neurocirculatory asthenia and malnutrition.⁶

Southern seashores may play an important future role in the mass escape from the hardships of Northern late winter. Today's winter vacation is governed by vogue and hearsay evidence. Southern state authorities could build it up to a national institution by encouraging and supporting financially biologic investigations of the effects of these winter migrations.⁷ Northern seashores in the summer are ideal grounds for medically supervised vacations of American children. Exposure to climatic hardships builds a strong race; hiding from them breeds weaklings.

Wind protected open air schools in the fall on the beaches of the northern part of the land would contribute greatly to build a future American youth fit for war and fit for peace.

SUMMARY

Thalassotherapy is the utilization of ocean climate in preventing and treating disease. Its main factors—sun, air and water—act by their influence on the skin and the mucous membranes as receptor organs. The blood and the autonomic nervous system are used as conductors of their effects; thereby acclimatization is achieved, with the endocrine system acting as a possible "pacemaker."

The rationale of thalassotherapy includes (a) a sojourn at the seashore (a stay of six to eight weeks) and (b) selective utilization of climatic factors under partial or complete (institutional) supervision. There are indications and contraindications for climatic stimulation and for climatic sedation.

Thalassotherapy is of military as well as public health importance.

⁶ Singer, C. L. Climate and Military Preparedness, J. A. M. A. 115:1421-1424 (Oct. 26) 1940.
⁷ Singer, C. L. Medically Supervised Vocational Migrations, J. A. M. A. 112:904-907 (March 11) 1939.

First Statistical Study of Disease.—From France came the first statistical studies of diseases. Of course there had been statistics of births and deaths before this time, but the great Parisian clinician Pierre C. A. Louis (1787-1872) was the first to show the value of purely medical statistics. By collecting the records of numbers of cases of different diseases he was able to show convincing proof of the efficacy, worthlessness or disastrous results of their treatment. Thus he helped to stem the torrent of bloodletting in which Broussais and others indulged, for he brought forward figures to show that in pneumonia, at least, bleeding was worse than useless. To Louis belongs the credit of showing that statistics are an important adjunct to the advancement of medical knowledge.—Haagensen, C. D., and Lloyd, Wyndham E. B. A Hundred Years of Medicine, New York, Sheridan House, Inc., 1943.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

METAMUCIL.—A mixture containing about 50 per cent of powdered mucilaginous portion (outer epidermis) of blonde psyllium seeds (*Plantago ovata*-Forsk.) and powdered anhydrous dextrose, with sodium bicarbonate 0.2 per cent, monobasic potassium phosphate 0.25 per cent, citric acid 0.33 per cent and benzyl benzoate 0.04 per cent.

Actions and Uses.—Metamucil is intended as an adjunct in the treatment of constipation. It encourages elimination by the formation of a soft, plastic, water-retaining gelatinous residue in the lower bowel. The muciloid is also claimed to have a demulcent effect in the presence of inflamed mucosa. Metamucil has been mixed with barium sulfate to obtain more uniform dispersion of the barium for x-ray visualization.

Dosage.—Four to 7 cc. one to three times daily, each dose thoroughly stirred in a glass of water and followed by an additional glass of liquid. Children receive proportionate amounts according to weight and age. It is important that adequate fluids be ingested to assure a soft bulk. Metamucil should not be used carelessly so that a state of dependency is reached.

Tests and Standards—

Metamucil is a white to cream colored, slightly granular powder, possessing little or no odor and a slightly sour taste. A uniform suspension is formed when 10 Gm. of the powder is stirred rapidly into 250 cc. of water. As the hydration and swelling of the mucilaginous portion progresses, the mixture assumes a soft gelatinous consistency.

Place about 10 Gm. of metamucil in a dry 25 cc. glass stoppered graduate. Fill the graduate to the 25 cc. mark with a solution made by mixing 27 cc. of chloroform and 73 cc. of carbon tetrachloride. Stopper the graduate and mix the contents thoroughly. Set the graduate aside and observe the contents at the end of two hours a light colored layer appears at the bottom of the tube, approximately equal in volume to a brownish colored layer which appears at the top of the tube. Mechanically separate the layers formed in the graduate and dry the material at 80 C.; powder from the lower layer is soluble in water and responds to tests for dextrose, powder from the upper layer forms a mucilage with water and is microscopically identical with fragmented material obtained from the outer epidermis of blonde psyllium seed (*Plantago ovata*-Forsk.).

Transfer 50 Gm. of metamucil to a suitable flask and determine the moisture content by means of the method for moisture by toluene distillation described in the U. S. P. XII; the moisture content found is not more than 4 per cent.

Transfer exactly 20 Gm. of metamucil to a 150 cc. beaker, add 0.1 Gm. of decolorizing charcoal and 30 cc. of 80 per cent, v/v, ethyl alcohol preheated to 65-70 C. Stir the mixture thoroughly for three minutes and filter, while still warm, into a 50 cc. volumetric flask. Rinse the beaker twice with 7 to 9 cc. of warm 80 per cent alcohol and filter the rinsings through the residue on the filter paper, adding the washings directly to the volumetric flask. Cool to 25 C., add three drops of stronger ammonia water, fill to the mark with 80 per cent alcohol and mix the contents of the flask. Allow the mixture to stand for ten minutes and then determine the optical rotation of a portion of the solution in a 2 decimeter tube, using sodium light. Multiply the observed angular rotation by 21.7 to obtain the percentage of anhydrous dextrose present in the specimen taken; the amount of dextrose found is not less than 46 per cent nor more than 50 per cent.

G. D. SEARLE & Co., CHICAGO

Metamucil: 8 ounce container

U. S. patent 2,095,259 (Oct. 12, 1937; expires 1954). U. S. patent 2,132,484 (Oct. 11, 1938; expires 1955). U. S. trademark 317,704 (Oct. 2, 1934).

SULFANILAMIDE (See New and Nonofficial Remedies, 1943, p. 175).

The following additional dosage form has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Sulfanilamide Surgical Powder (Sterile): 5 Gm. puffer tube.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1943, p. 182).

The following additional dosage form has been accepted.

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Sulfathiazole Surgical Powder (Sterile): 5 Gm.

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SATURDAY, APRIL 15, 1944

METABOLIC ASPECTS OF SHOCK

The hemodynamic disturbances in shock originate new conditions for cellular respiration and metabolism. All tissues and systems of the body suffer from a deficient blood flow and oxygen supply. Long and his group¹ report a series of investigations of the factors responsible for the metabolic disorders in shock. The sensitivity of liver and kidney to the anoxia accompanying hemorrhagic shock was tested by comparing the rate of respiration of slices of liver and kidney from normal rats and from rats in progressively severe states of shock. While the kidney did not show significant depression in use of oxygen even in most severe shock, liver proved to be exceedingly vulnerable to the deprivation of oxygen. The consumption of oxygen by slices of liver from severely shocked rats was about three times lower than that from normal rats. The depression in rate of use of oxygen by liver was closely parallel to the degree of severity of shock. Many of the chemical changes in the blood observed during the state of shock could be ascribed to the functional damage of the liver. There was an inverse correlation between the rate of oxygen consumption of the liver and the rise in level of amino acids of the blood which occurs in severe hemorrhage. Since deamination is to a great extent limited to the liver, hepatectomized animals constitute an appropriate preparation for the analysis of the role that the rate of breakdown of protein plays in the elevation of amino acids in the blood. In eviscerated rats with shock, Long and his colleagues found that the rate of accumulation of amino acids in the blood was much higher than that of eviscerated control rats. This observation indicates that an increased breakdown

of protein occurs in the peripheral tissues in shock. This affects mainly the muscles, which are, in addition to failure of the liver, responsible for the elevation of levels of nonprotein nitrogen and amino acids. Hence these levels may be used as an index of the damage suffered by the liver and muscles in shock.

The abnormalities in carbohydrate metabolism in shock were also studied by Long's group. While the blood sugar rises initially as a result of liberation of epinephrine as shown in adenodemedullated animals, in later stages of shock hypoglycemia of varying severity occurs. In hepatectomized shocked rats the rate of fall in blood sugar levels was distinctly greater than in the hepatectomized control rats. As the increased rate of utilization of glucose was associated with definite elevation of lactate and, to a smaller degree, of pyruvate, a shift from aerobic to anaerobic type of carbohydrate breakdown yielding less energy for molecule of glucose utilized was postulated.

Similar disturbances in carbohydrate metabolism had previously been reported by Govier and his colleagues,² who stressed the important role that the correction of the metabolic disorders may play in the therapy of shock. Thus dogs with a higher plasma level of thiamine were more resistant to the onset of shock than those with low thiamine in plasma. When thiamine was administered before bleeding, the blood pressure showed a constant tendency to return to normal after hemorrhage, enabling the animals to withstand more bleeding than the controls. Therapeutic administration of thiamine to dogs in which hemorrhagic shock had been induced prolonged significantly their survival time, as sugar, keto acids and lactic acid levels in the blood returned to normal.

These studies indicate the extreme importance of metabolic disorders in determining the course and outcome of shock. They also represent an important step in understanding the mechanisms responsible for shock and in correction of the abnormalities resulting from it.

VIRUS PNEUMONIA IN CATS

An infection of the respiratory tract in cats, variously called nasal catarrh, influenza or distemper, has been frequently observed in the Northeastern states. The main characteristics of this disease are sneezing, coughing and mucopurulent discharge from the eyes and nose. Although pneumonia usually cannot be demonstrated during life, necropsies often reveal grayish, densely consolidated areas in the anterior lobes. The disease is rarely fatal. The acute symptoms seldom persist for more than one or two weeks, although the debilitating after-effects usually last for over a month.

2. Govier, W. M., and Greer, C. M.: Studies on Shock Induced by Hemorrhage: I. Effect of Thiamine on Survival Time, *J. Pharmacol. & Exper. Therap.* **72**: 317 (Aug.) 1941; II. Effect of Thiamine on Disturbances of Carbohydrate Metabolism, *ibid.* **72**: 321 (Aug.) 1941. Govier, W. M.: III. The Correlation of Plasma Thiamine Content with Resistance to Shock in Dogs, *ibid.* **77**: 40 (Jan.) 1943. Greig, Margaret E., and Govier, W. M.: IV. The Dephosphorylation of Cocarboxylase in Tissues During Shock and Anoxia, *ibid.* **79**: 169 (Oct.) 1943.

1. Engel, F. L.; Winton, Mary G., and Long, C. N. H.: Biochemical Studies on Shock: I. The Metabolism of Amino Acids and Carbohydrate During Hemorrhagic Shock in the Rat, *J. Exper. Med.* **77**: 397 (May) 1943. Russell, Jane A.; Long, C. N. H., and Engel, F. L.: Biochemical Studies on Shock: II. The Role of the Peripheral Tissues in the Metabolism of Protein and Carbohydrate During Hemorrhagic Shock in the Rat, *ibid.* **79**: 1 (Jan.) 1944. Engel, F. L.; Harrison, Helen C., and Long, C. N. H.: Biochemical Studies on Shock: III. The Role of the Liver and the Hepatic Circulation in the Metabolic Changes During Hemorrhagic Shock in the Rat and the Cat, *ibid.* **79**: 9 (Jan.) 1944. Russell, Jane A.; Long, C. N. H., and Wilhelm, A. E.: Biochemical Studies on Shock: IV. The Oxygen Consumption of Liver and Kidney Tissue from Rats in Hemorrhagic Shock, *ibid.* **79**: 23 (Jan.) 1944.

This pneumonic infection has been recently studied in detail by Baker¹ of the Department of Animal Pathology, Rockefeller Institute. Isolation of the causative agent was accomplished as follows: A 10 per cent emulsion of pneumonic tissues was prepared from sick cats, centrifuged for five minutes at 1,200 revolutions per minute and 0.05 cc. of the resulting supernatant fluid inoculated intranasally under light ether anesthesia into young mice. The mice became sick and usually died in from three to five days; necropsies showed a definite pneumonia, usually involving more than half of the lung tissues. Emulsions of these tissues were prepared in the same way as with the cat lungs and inoculated intranasally into other mice. In this way five strains of the cat infection have been established in mice. As a result of serial passage all five strains have increased in mouse virulence, death now occurring in two to three days after intranasal infection.

After the fifth and twentieth serial passages in mice the intranasal minimum lethal dose was determined for each strain. Groups of 5 animals each were then inoculated respectively with 10 minimum lethal doses intranasally, 10 intracerebrally, 50 intraperitoneally and 100 subcutaneously. All mice inoculated intranasally died in two to three days, while those inoculated by the three other routes did not develop signs of illness. Nevertheless the causative agent was present in suspensions of the brains of the mice inoculated intracerebrally and in the spleens of those injected intraperitoneally in sufficient quantities to give lethal pneumonia on intranasal instillation into other mice. Attempts to adapt the causative agent to extrapulmonary tissues by serial intracerebral or intraperitoneal passage gave negative results.

Although the mice inoculated intraperitoneally, intracerebrally or subcutaneously with the active suspensions did not develop signs of illness, they did acquire an almost solid specific immunity. Tested fourteen to twenty-one days later these vaccinated mice were fully resistant to intranasal instillation of massive doses of the infectious agent, control mice invariably succumbing to the infection.

Several groups of inoculated and noninoculated mice were placed together in the same cages. The inoculated mice were allowed to die before removal from the cages. Symptoms were not observed in the exposed mice, pneumonia was not found in half of the mice then killed for necropsy, and immunity could not be demonstrated in the remaining half, which were afterward tested by the intranasal route. The tests indicate that the disease is not readily spread by contact in mice, though contact transmission was readily demonstrable in cats.

A number of different animal species were tested for susceptibility to this infectious disease by intranasal instillation of doses roughly proportional to the body

weight. Mice, hamsters and young guinea pigs were highly susceptible, all dying from the disease. Cats, rabbits and adult guinea pigs showed only a mild infection, from which all recovered, necropsies revealing only mild pneumonic lesions as contrasted with the massive pneumonias in the highly susceptible species.

Cultures on blood agar and other specialized mediums failed to demonstrate a cultivable agent, suggesting that the causative agent is presumably a virus. Films prepared from pneumonic lungs revealed structures similar to the cytoplasmic plaques or elementary bodies developing in tissue cultures of psittacosis virus.² The unknown agent was readily cultivated in the yolk sac of fertile hen's eggs,³ where it also developed elementary bodies similar to those formed by the psittacosis virus. Centrifugation at 10,000 revolutions per minute for thirty minutes of suspensions containing both elementary bodies and the infective agent concentrated both the agent and the elementary bodies together. Both the infective agent and the elementary bodies failed to pass through a Berkefeld N filter. Complement fixation experiments using a suspension of partially purified elementary bodies as antigens gave positive results with the serums of recovered cats. These tests suggest that the elementary bodies are immunochemically identical with the virus.

Among Baker's clinically suggestive results are his tests of the possible viricidal action of immune cat serum. Although recovery serum gives positive complement deviation reactions with the elementary bodies, the serum is without demonstrable neutralizing effects on the virus. When inoculated intranasally into mice, the virus-serum mixtures are fully infective, suggesting that acquired immunity to the feline virus is due to cytologic rather than to humoral adaptations.

Tests of cats one to two months after full recovery showed that the virus was still present in infectious concentration in the nasal tissues. Inoculation of suspensions of ground nasal turbinates intranasally into mice gave lethal pneumonia. Cats that recover are demonstrably immune, since they do not show signs of reinfection when given multi-infective doses intranasally.

Numerous viruses have been previously described for cats. Lawrence,⁴ Hammon⁵ and others have reported a filtrable virus which produces fulminating leukopenia when injected intravenously. This virus, however, is not infective on intranasal instillation and is non-pathogenic for other animal species. The same virus had been previously described by Verge⁶ and others⁷ under the name of "cat enteritis." Two years ago

2. Bland, J. O. W., and Cantu, R. G.: *J. Path. & Bact.* **40**: 231, 1935.

3. Cox, R. H.: *Pub. Health Rep.* **53**: 2241, 1938.

4. Lawrence, J. S., and Syvertson, J. T.: *Proc. Soc. Exper. Biol. & Med.* **38**: 914, 1939.

5. Hammon, W. D., and Enders, J. F.: *J. Exper. Med.* **69**: 327, 1939.

6. Verge, J., and Christoforoni, N.: *Compt. rend. Soc. de biol.* **99**: 312, 1928.

7. Hindle, E., and Findlay, G. M.: *Proc. Roy. Soc. Med.* **26**: 197, 1933.

1. Baker, J. A.: *J. Exper. Med.* **79**: 159 (Feb.) 1944.

Blake⁸ discovered a pneumonia virus in kittens which is also noninfectious for mice and does not produce elementary bodies. The conclusion is drawn that Baker's virus differs from all feline viruses previously described. Presumably it is not the only virus capable of producing nasal catarrh and nonlethal pneumonia in cats.

VAGINAL SMEARS IN CARCINOMA OF UTERUS

The death rate from carcinoma of the female genital tract, according to Dublin,¹ is approximately 32,000 per year in the United States; of this figure four fifths, or 26,000, of the deaths annually are due to cancer of the uterus. This rate has remained practically constant during the past twenty-five years. This is tragic, since early diagnosis and modern treatment produce a high percentage of cures in carcinoma both of the fundus of the uterus and of the cervix. Papanicolaou and Traut² point out that the present difficulty in early diagnosis is our great dependence on the subjective symptoms of the disease to bring the patient to the physician. By the time the patient becomes sufficiently aware of discomfort to seek help, the disease is far advanced. Even when the patient is seen early in the course of the disease, the technic for making a positive diagnosis is not simple, as it involves biopsy followed by the procedures necessary for microscopic examination, all of which are time consuming and relatively expensive. Hoge³ questioned on admission to the hospital 91 patients in an effort to analyze the period of delay before treatment. On the average patients delayed four months before going to the doctor after the onset of symptoms, the doctor delayed three months before giving proper advice and there was another month of delay before treatment was begun.

Papanicolaou, after years of study of the normal and abnormal variations in the vaginal smear in women and in animals, became aware of the fact that carcinoma of the fundus of the uterus and carcinoma of the cervix are to some extent exfoliative lesions in the sense that cells at the free surface of the growth tend to become dislodged and subsequently to find their way into the vagina. He has developed a method for collecting the cellular debris, which is smeared on glass slides and stained in a particular way so that the various components may be studied. The method is simple and inexpensive and may be applied to large numbers of women. Papanicolaou states that cells pathognomonic of cervical and fundal carcinoma can be definitely recognized. The interpretation of smears calls for an intimate knowledge of the cytologic characteristics of the vaginal fluid.

Meigs and his associates⁴ studied the vaginal smears taken from 220 patients. Smears were taken from 153 women either because they were in the cancer age or because they had symptoms of vaginal bleeding or discharge; of these, 79 had biopsy, curettage or hysterectomy with negative tissue diagnosis for cancer. The remainder of these patients with negative smears did not present enough evidence for malignant disease to require operative procedure. Cancer cells were not found in the smears taken from these women. A histologic diagnosis of uterine carcinoma was made in 62 cases, 46 being carcinoma of the cervix; 40 of these cancers were epidermoid. Of the 46 cases with proved cancer of the cervix, positive vaginal smear diagnosis was made in 45, a percentage error of 2.2. Ten cases, or 22 per cent, were classified as early cervical carcinoma. Of 12 cases of endometrial cancer, 11 were diagnosed by vaginal smear, a percentage error of 8.3. Of 153 negative cases, positive smears were reported in 4, an error of 2.6 per cent. A cancer cell can be more readily identified in the vaginal smear than in the body fluid sediments or in the sputum. This increased accuracy in diagnosis is probably due to the fact that the cells of the vaginal fluid are in greater concentration and have suffered less degeneration. These authors do not feel justified in advising operation for uterine cancer solely on the evidence of a positive vaginal smear. The positive smears should be confirmed by biopsy or curettage. They consider the method as of significant value. The need for a systematic study of the entire smear and an experienced knowledge of cytology are emphasized. The method of vaginal smear examination appears to be an important addition to the early recognition of uterine cancer.

Current Comment

LEUKEMIA IN PHYSICIANS

Leukemia may occur in workers with radiation under conditions like those in which carcinoma of the skin due to radiation can arise. Exposure to x-rays under experimental conditions favors the development of leukemia in animals. Since high energy radiations may play a part in human leukemia, workers in the National Cancer Institute¹ have compared the incidence of leukemia in physicians and in the general population on the basis of the death lists of physicians in THE JOURNAL, the mortality reports of the United States Bureau of the Census and an unpublished compilation of the United States Public Health Service. The ratio of deaths from leukemia to deaths from cancer, the ratio of deaths from leukemia to total death rates, and death rates from leukemia were studied with the result that leukemia "was recognized approximately

8. Blake, F. G.; Howard, M. E., and Tatlock, A.: *Yale J. Biol. & Med.* 15: 129, 1942.

1. Dublin, L. I.: *Cancer Problems, Symposium*, 1937, p. 237.

2. Papanicolaou, G. N., and Traut, H. F.: *J. Obst. & Gynec.* 42: 193, 1911.

3. Hoge, Randolph H.: *Carcinoma of the Cervix: Time Lost Before Treatment*, *Virginia M. Monthly* 69: 200 (April) 1942.

4. Meigs, J. V.; Graham, Ruth M.; Fremont-Smith, M.; Kapnick, I., and Rawson, R. W.: *The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer*, *Surg., Gynec. & Obst.* 77: 449 (Nov.) 1943.

1. Henshaw, P. S., and Hawkins, J. W.: *Incidence of Leukemia in Physicians*, *J. National Cancer Institute* 4: 339 (Feb.) 1944.

1.7 times more frequently among physicians than among white males in the general population." The result is in accord with the increase in the incidence of leukemia in animals exposed to x-rays. Whatever the full meaning of the data at hand may be, the hazards of radiation require the strict maintenance of complete protection at all times.

INADEQUATE DIETS AND NUTRITIONAL DEFICIENCIES IN THE UNITED STATES

The Committee on Diagnosis and Pathology of the Food and Nutrition Board has reviewed material reported in widely scattered journals on the state of nutrition of the people of the United States.¹ An appreciable percentage of diets fail to meet more than 50 per cent of the recommended daily allowances of the Food and Nutrition Board, but many more diets are deficient by less than 50 per cent. This widespread prevalence of more or less deficient diets is associated with a high incidence of deficiency states, largely mild in intensity and gradual in its course. The problem thus created is both preventive and corrective. For prevention, production of sufficient food must be maintained and better distribution is required; judicious enrichment of appropriate foods may be advisable, and dietary education should be intensified and extended. For correction there is need for skill in detecting deficiency conditions and improved procedure for the treatment of such conditions. There has been some exaggeration of the benefits of optimal nutrition and much exploitation of the vitamins. This has retarded the proper application of the science of nutrition. However, knowledge of the relation of nutrition to health is being rapidly uncovered. The evidence now available, incomplete though it may be, leads to but one conclusion: that "there is a real difference as measured in terms of growth development and general health record between optimum and just adequate nutrition; and that every practical effort should be made to apply this knowledge in the interest of human welfare."

ANTITOXIN IN PLANT MATERIAL

Discovery of a hitherto unsuspected antitoxic factor in numerous plant materials is currently reported by Woolley and Krampitz¹ of the Rockefeller Institute. The discovery was a by-product of research on the toxic properties of glucoascorbic acid, a homologue of ascorbic acid having the same structural relationship to dextrose that ascorbic acid has to xylose. Given by mouth, this homologue apparently "blocks" ascorbic acid synthesis and utilization in cotton rats and mice, causing the characteristic symptoms of scurvy as seen in animal species susceptible to that disease. Inhibition of the action of vitamins by closely related chemical

homologues is not new, since "homologue blockade" is well established in bacteriology.² This, however, is the first demonstration of a similar phenomenon in higher animals. Woolley and Krampitz found that, when 5 per cent glucoascorbic acid is added to their routine highly purified basic diet, growth is inhibited in both rats and mice, followed by diarrhea, subcutaneous hemorrhages and rapid loss of weight, death usually occurring within three weeks. Oral or subcutaneous administration of ascorbic acid will not prevent or cure this scurvy-like syndrome. If, however, instead of 5 per cent glucoascorbic acid being added to the routine highly purified basic diet the same amount of the homologue is added to a mixture of natural rations, no scurvy-like symptoms develop. There is apparently some factor in natural plant materials that neutralizes or otherwise prevents "homologue toxicity." Dehydrated young grass was found to be the plant material of highest prophylactic or therapeutic value, with fresh cabbage a close second. The antitoxic factor in dehydrated grass is not destroyed by cooking.

CONSTITUTIONAL PRECOCIOUS PUBERTY

According to Novak,¹ genetic factors and endocrine mechanisms control the onset and development of the puberal processes. Precocious puberty and menstruation in females are more frequently dependent on an abnormal genetic constitution than on endocrine tumors or cerebral lesions acting by way of the hypothalamus and hypophysis. In the diagnostic search for the cause of precocious puberty, granulosa cell tumor of the ovary is considered as the first and most likely possibility. However, this tumor has been shown to be an extremely rare condition. In more than 60,000 patients examined in the Johns Hopkins department of gynecology only 1 instance of granulosa ovarian tumor was registered. Constitutional precocious puberty, in which the early development of the puberal phenomenon is not produced by any demonstrable underlying pathologic change, is considered by Novak the commonest form of precocious puberty. This author reports 9 cases of this syndrome in which tumor of the ovaries, adrenals or pituitary could not be demonstrated. A careful follow-up of these patients failed to detect any evidence of endocrine disturbances, neoplastic growth or cerebral involvement which would be expected to occur were these cases due to these factors. Constitutional precocious puberty is characterized not only by the development of puberal changes which were entirely normal except for the early age at which they appeared but also by the occurrence of the ovulatory menstrual cycle as evidenced by the finding of corpus luteum in 3 cases in which exploratory laparotomy was done. Hence it seems likely that many or all cases of abnormally early pregnancy that have been reported may have been instances of constitutional precocious puberty.

1. Report of the Committee on Diagnosis and Pathology, Food and Nutrition Board, National Research Council, Bulletin of the National Research Council, Number 109, November 1943.

1. Woolley, D. W., and Krampitz, L. O. *J. Exper. Med.* **75**: 333 (Nov.) 1943.

2. Woods, D. D.: *Brit. J. Exper. Path.* **21**: 74 (April) 1940. McIlwain, H., *Ibid.* **21**: 136 (June) 1940.

1. Novak, E.: *The Constitutional Type of Female Precocious Puberty with a Report of 9 Cases*, *Am. J. Obst. & Gynec.* **17**: 21 (Jan.) 1944.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

ARMY FACILITIES AT FORT MEADE, SOUTH DAKOTA, TRANSFERRED TO VETERANS ADMINISTRATION

The War Department announced recently that the facilities of Fort Meade, South Dakota, will be transferred to the Veterans Administration on or before April 15 for use by the agency in treating sick and wounded veterans. This will be the first of several anticipated transfers by the Army of installations which at present are not needed for training because of troop movements overseas. Decision to permit the use of such army camps by the Veterans agency was reached some time ago at a meeting between Lieut. Col. Brehon Somervell, commanding general, U. S. Army, Army Service Forces; Brig. Gen. Frank T. Hines, chief of the Veterans Administration, and Major Gen. Norman T. Kirk, Surgeon General, U. S. Army. Fort Meade, an old regular army cavalry installation, can accommodate 2,031 men. caretaking detachment of approximately 150 personnel is stationed there at present, but all War Department personnel will be transferred on assumption of responsibility by the Veterans Administration.

APPOINT OPTICAL ADVISORY BOARD

The Office of the Surgeon General, U. S. Army, recently appointed a temporary board to be known as the Optical Advisory Board, to provide assistance in developing policies relating to the Spectacle Program and to provide for expediting decisions involving technical considerations. The board will consider such questions as may be referred to it and will meet at such times as may be requested by the officer in charge of the optical program, Lieut. Col. Walter H. Potter. Members of the board are:

Dr. William Thornwall Davis, 927 Farragut Square N.W., Washington, D. C.
Dr. Conrad Berens, 477 First Avenue, New York.
Col. Fred H. Thorne, M. C., Keesler Field, Mississippi.
Col. Burr N. Carter, M. C., Surgeon General's Office, Washington, D. C.
Lieut. Col. Walter H. Potter, Sn. C., Surgeon General's Office, Washington, D. C.

Capt. Kenneth A. Short, M. A. C., will act as liaison officer. Any questions on which board advice is desired may be submitted through Captain Short, who will report the findings or recommendations of the board.

LIEUT. HELEN E. WHARTON APPOINTED CHIEF NURSE OF FIFTH ARMY

The War Department recently announced the appointment of 1st Lieut. Helen E. Wharton, Army Nurse Corps, as chief nurse of the Fifth Army. She will be responsible for administration of nursing affairs on the scene of Fifth Army Medical Corps activities at and near the Italian front, which was formerly conducted from headquarters of the North African theater. As chief nurse, Lieutenant Wharton will be responsible for assignment of officers of the Army Nurse Corps serving with Fifth Army units in Italian combat zones and at base hospitals. She is a veteran of the Italian campaign, landing as chief nurse of an evacuation unit shortly after invasion troops secured their positions last September, and was aboard a hospital ship bombed in the bay of Salerno. Later she worked with other army nurses and doctors to restore the unit's hospital facilities and rescue patients after a tornado struck the hospital area.

Before joining the Army Nurse Corps in 1942, Lieutenant Wharton was assistant director of nursing at the New York Psychiatric Institute, New York. She is a graduate of the nursing school at Michael Reese Hospital, Chicago, with which volunteer unit she underwent training at Camp Blanding, Florida, and went overseas in April 1943.

MONTHLY MEETING OF MEDICAL OFFICERS AT ARMY MEDICAL CENTER

At the monthly meeting of medical officers in the Washington area held at the Army Medical Center, March 20, Col. J. E. Ash spoke on "Outline of the Functions and Facilities of the Army Medical Museum and Institute of Pathology," Capt. Frank H. Netter discussed "Medical Arts of the Museum, Particularly Its Application to the Training Program and to Prosthesis and Plastic Surgery," and Capt. Ralph P. Creer delivered a slide talk on "Museum and Medical Arts Service." A portfolio on first aid treatment program for enlisted men of the line and latex material used in training enlisted men of the Medical Department in emergency medical treatment was demonstrated after the meeting.

REDUCTION OF FRACTURES DURING FLUOROSCOPIC EXPOSURE

Since there are a few army hospitals which employ x-ray fluoroscopy during the reduction of fractures, the War Department has recently issued the Technical Bulletin of Medicine No. 22, in which it is recommended that, since this is one of the most dangerous uses of x-rays, lead impregnated gloves should be worn during the reduction of fractures under fluoroscopic exposure. Arrangements can easily be made with the x-ray department of any hospital for rapid film processing near the operating room, which will make possible control films to check position of fragments during reduction. These films can be processed and shown to the surgeon within two to five minutes after exposure.

BOARD ON DECLASSIFICATION OF RESEARCH AND MEDICAL REPORTS

A board of officers was recently named to consider all categories of classified technical medical and research reports and make recommendations to appropriate authority through the Surgeon General for declassification of reports when such change of classification is regarded as desirable. The board consists of the following officers:

Brig. Gen. Stanhope Bayne-Jones, chairman.
Col. Roger C. Prentiss, M. C.
Lieut. Col. William C. Menninger, M. C.
Lieut. Col. Frank R. Dieuaide, M. C.
Major Michael J. DeBakey, M. C.
Major Harold F. Dorn, Sn. C.
Major Harold M. Horack, M. C., secretary.

CAPT. CHARLES L. COGBILL JR. MISSING

Capt. Charles Lipscomb Cogbill Jr., formerly of Rochester, N. Y., has been reported missing in action in Italy since January 30. Dr. Cogbill had been serving overseas since November 1942 with the medical detachment of an infantry division. He graduated from Vanderbilt University School of Medicine, Memphis, in 1941 and entered the service in the fall of 1942.

ARMY PERSONALS

The commanding general of the Army Air Force Eighth Fighter Command announced the appointment of Major Louis Levine, formerly of Brooklyn, as commander of the base hospital at his station. Dr. Levine was commissioned as a first lieutenant in the Medical Corps July 12, 1942, and his exceptional ability earned him rapid promotion. He graduated from the University of Glasgow Medical Faculty in 1935.

Major Irving Graef, on leave of absence from the New York University College of Medicine, where he was associate professor of pathology, has been appointed director of the Medical Research Laboratory at Dugway Proving Ground, Tooele, Utah. This laboratory is an installation of the Medical Division Office of the chief of Chemical Warfare Service. Dr. Graef graduated from Cornell University Medical College, New York, in 1926 and entered the service Dec. 16, 1940.

Col. Floyd L. Wergeland, executive officer of the Medical Replacement Training Center, Camp Barkeley, Texas, since December 1942, has been named director of the Training Division, Surgeon General's Office. Dr. Wergeland succeeds the late Col. Frank B. Wakeman as director of training on the staff of Major Gen. Norman T. Kirk, Surgeon General of the Army. Dr. Wergeland is a Regular Army officer. He

received his degree in medicine at the College of Medical Evangelists, Loma Linda, Calif., in 1932 and entered the service in 1933 as a first lieutenant.

Brig. Gen. Percy J. Carroll, who was recently awarded the Distinguished Service Medal (*THE JOURNAL*, February 26, p. 580) for his role in safely evacuating wounded from the Philippines and subsequent achievements in the Southwest Pacific and the Far East, has been appointed commander of the new 1,500 bed Vaughan General Hospital at Hines, Ill.

Col. Frank H. Dixon, who has been stationed at Second Army headquarters in Memphis, Tenn., was recently designated as Third Service Command surgeon to take charge of all medical, dental, veterinarian, nursing and sanitary activities at installations in Pennsylvania, Maryland and Virginia. Dr. Dixon graduated from Indiana University School of Medicine, Bloomington, in 1911 and entered the service in 1914.

GRADUATE MEDICAL ADMINISTRATIVE OFFICERS

The thirtieth class of the Camp Barkeley Medical Administrative Corps Officer Candidate School graduated on March 15. Brig. Gen. Roy C. Heflebower, school commandant, presented the diplomas and commissions.

NAVY

LIEUT. HARVEY F. KREUZBURG AWARDED SILVER STAR MEDAL

Lieut. Harvey F. Kreuzburg, formerly of Washington, D. C., was awarded the Silver Star Medal "for conspicuous gallantry and intrepidity as medical officer of a U. S. destroyer in action against enemy Japanese forces in the South Pacific Area on Aug. 21, 1943. Although seriously wounded in the left arm during an air attack on his ship by enemy planes, Lieutenant Kreuzburg steadfastly ministered to his injured comrades with thorough skill and efficiency until severe loss of blood forced him finally to assume the less hazardous task of directing medical aid. By his selfless devotion to duty, his professional integrity and heroic perseverance, Lieutenant Kreuzburg undoubtedly saved the lives of many men who otherwise might have perished." Dr. Kreuzburg graduated from Georgetown University School of Medicine, Washington, in 1937 and entered the service March 7, 1942.

LIEUT. FAY B. BEGOR AWARDED NAVY CROSS

Lieut. (jg) Fay B. Begor, Medical Corps, U. S. Naval Reserve, was recently awarded the Navy Cross posthumously. The citation accompanying the award read as follows: "For extraordinary heroism and devotion to duty as Medical Officer aboard an Infantry Landing Craft when that vessel was disabled by a near miss from a Japanese bomb on Sept. 4, 1943. After the crippled ship was beached at Japanese occupied Lae on the island of New Guinea, Lieutenant (junior grade) Begor calmly continued his ministrations to the wounded in the face of repeated Japanese bombing and strafing attacks until he was killed by enemy fire. His courageous spirit of self sacrifice in rendering service to others in time of extreme peril was in keeping with the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Dr. Begor graduated from McGill University Faculty of Medicine, Montreal, in 1941 and entered the service Sept. 1, 1942.

LIEUT. COMDR. CLARK N. COOPER COMMENDED

Lieut. Comdr. Clark N. Cooper, formerly of Waterloo, Iowa, has been cited for "outstanding performance of duty" by Vice Admiral Frank J. Fletcher, commander of the North Pacific Force. The commendation reads "For meritorious service as senior officer of the U. S. S. *Saint Mihiel* during and subsequent

to the assault on enemy held Attu Island. Lieut. Comdr. Clark N. Cooper, MC-V(S), United States Naval Reserve, was continuously on duty day and night, supervising the handling of and operating on the battle casualties received directly from the assault forces. His leadership, devotion to duty and professional skill were responsible for the excellent medical treatment received by personnel suffering from battle wounds and frozen feet. His conduct throughout was in keeping with the highest traditions of the naval service." Dr. Cooper graduated from the State University of Iowa School of Medicine, Iowa City, in 1928 and entered the service Sept. 19, 1942.

NAVY NURSE CORPS

The President recently signed H. R. 2976, the bill that gives actual rank to members of the Navy Nurse Corps during the period ending six months after the conclusion of the war. Heretofore they have had only relative rank. The enacted law places the nurses on a level with the officers of the Navy, Marine Corps and Coast Guard.

Congress recently passed an amendment to the Bolton Act which enables the Navy to participate in the education of students who are members of the United States Cadet Nurse Corps. The plan is to accept annually approximately 600 cadet nurses who are in the last half of the senior year for supervised practice in certain naval hospitals. At the end of the senior cadet practice they will be returned to their home schools for graduation. After passing their state board examinations the cadets will be eligible to make application for acceptance in the Nurse Corps of the Navy. This is a war measure only and will terminate with the last class of students to start their nursing education before the end of hostilities.

NEW NAVAL HOSPITALS TO BE CONSTRUCTED

The House Naval Affairs Committee, in a general public works authorization bill, reported recently an authorization for appropriation of \$42,071,750 for the construction of new naval hospitals and additions to existing facilities, to provide 20,100 additional beds. In its report on the bill the committee pointed out that on completion of the current fiscal year 1944 a total of 60,000 naval hospital beds will be available. The committee further stated that "based on statistics compiled from actual occupancy, first eighteen months of the war, and applied to the personnel, dispersion, peakload requirements and other factors known for 1945, a total of 80,000 beds in naval hospitals will be required to meet hospitalization needs in that year."

MISCELLANEOUS

HOSPITALS NEEDING INTERNS
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, April 8, page 1068)

ALABAMA

Norwood Hospital, Birmingham. Capacity, 246; admissions, 5,755. Mrs. Ross E. Roberts, R.N., Superintendent (interns).

CONNECTICUT

Lawrence and Memorial Associated Hospitals, New London. Capacity, 291; admissions, 4,844. Mr. Richard J. Hancock, Administrator (interns).

IOWA

Mercy Hospital, Cedar Rapids. Capacity, 179; admissions, 3,862. Sister Mary Mercy, R.N., Superintendent (interns, residents).

MASSACHUSETTS

Wesson Memorial Hospital, Springfield. Capacity, 112; admissions, 2,898. Mr. James M. Dunlop, Superintendent (1 intern—August 1).

NEBRASKA

Lincoln General Hospital, Lincoln. Capacity, 213; admissions, 4,574. Mr. Robert B. Witham, Administrator (interns).

NEW YORK

Auburn City Hospital, Auburn. Capacity, 240; admissions, 6,844. Mr. Jerome F. Peck Jr., Acting Superintendent (assistant resident—August 1).
Meadowbrook Hospital, Hempstead. Capacity, 275; admissions, 5,085. Dr. A. J. McRae, Superintendent (2 interns—October 1).
Knickerbocker Hospital, New York City. Capacity, 200; admissions, 3,634. Mr. B. E. Foss, Administrator (5 interns).
New York City Hospital, New York City. Capacity, 880; admissions, 7,531. Dr. Beatrice Katz, Deputy and Acting Medical Superintendent (1 intern, residents—dermatology, neurology, etc., ear, nose, throat).
Highland Hospital, Rochester. Capacity, 266; admissions, 5,249. Dr. George B. Landers, Director (3 interns—September).

NORTH CAROLINA

Park View Hospital, Rocky Mount. Capacity, 125; admissions, 3,194. Mr. J. L. Melvin, Superintendent (mixed residencies).

OHIO

St. Alexis Hospital, Cleveland. Capacity, 220; admissions, 7,702. Sister Mary Elzearia, R.N., Superintendent (residents, interns).

TENNESSEE

St. Joseph Hospital, Memphis. Capacity, 316; admissions, 9,746. Sister M. Sponsaria, Superintendent (2 interns, resident).

WISCONSIN

Luther Hospital, Eau Claire. Capacity, 176; admissions, 4,377. Mr. N. E. Hanshus, Superintendent (intern, resident).
Madison General Hospital, Madison. Capacity, 234; admissions, 6,472. Miss Grace Crafts, Administrator (interns, residents—August, September, October).

STUDY CIVILIAN DISTRIBUTION OF
PENICILLIN

The Chemicals Bureau of the War Production Board announced recently that, with 95 per cent of new plant construction under the penicillin program begun last June having been completed and 90 per cent of the operating facilities delivered, no further major expansions will now be approved. Only minor adjustments in approved projects necessary for the elimination of production bottlenecks will be considered at this time. However, the War Production Board stated that it may be necessary to grant a limited amount of priority assistance to individuals with original processes for making penicillin. Members of WPB's Penicillin Producers Industry Advisory Committee are now studying proposals for exchanging technical and patent information and have been asked to make recommendations on civilian distribution.

At a recent meeting of the committee, members of a subcommittee named to study the civilian distribution problem reported that any definite recommendation would be premature at this time. The supply situation is expected to become clear soon, it was said, and more time was asked to consider the problem. Chemicals Bureau officials said that the subcommittee had been asked to make recommendations on how civilian dis-

tribution should be handled when penicillin is available to the extent of some 10 billion units or more a month. Various proposals for distribution were advanced for discussion. Under one of these allocation through the National Research Council would be continued for suitable critical cases in which there is jeopardy to life for a limited number of serious but noncritical cases, and for research. Members of the industry suggested to WPB officials, however, that until such time as more than 10 billion units a month is available, rigid control of civilian distribution would be necessary to prevent black market operations and indiscriminate use of penicillin.

CASUALTIES OF U. S. ARMED FORCES
SINCE OUTBREAK OF WAR

The Office of War Information reported on March 22 the number of casualties of the United States armed forces from the outbreak of the war, totaling 165,061. This total, combining the latest available War and Navy Department reports, includes 38,846 dead, 58,964 wounded, 35,521 missing and 31,730 prisoners of war. Of the prisoners of war, 1,894 have died in prison camps, mostly in Japanese occupied territory.

The War Department report (as of Feb. 29, 1944) lists army casualties totaling 123,054. Of this number 21,014 were killed, 48,260 wounded, 26,464 missing and 27,316 prisoners of war. Of the wounded 25,688 have returned to active duty or been released from the hospital. The casualties include 12,506 Philippine Scouts. Of these 469 were killed and 747 wounded. The others are assumed to be prisoners of war.

The Navy Department report (as of March 22, 1944) shows casualties whose next of kin have been notified totaling 42,007, made up of 17,832 dead, 10,704 wounded, 9,057 missing and 4,414 prisoners of war.

SUBSTANDARD DIET IN THE NETHERLANDS

In a recent release from the Netherlands Information Bureau, New York, the Dutch medical delegate to the United Nations Relief and Rehabilitation Administration conference at Atlantic City last November stated that the caloric content of the weekly ration in the Netherlands for April 1943 was 32.6 per cent below standard, animal protein 62.8 per cent, calcium 57.7 per cent, phosphorus 57.7 per cent, vitamin A 85 per cent, vitamin D 96 per cent and vitamin C 37 per cent. This means that the Dutch people are not consuming sufficient milk, bread, butter, meat, cheese, sugar, vegetables, oranges, lemons and eggs. In this connection Dr. Christian Goette, head of the Dutch-Nazi Medical Front, stated that, "in regard to the general health of the population, it must be said that resistance has been decreased as a result of the long duration of the war and that the number of infectious diseases has increased. This applies particularly to venereal diseases and tuberculosis. I wish it were possible to improve the nutrition of our youth, because undernourishment is spreading."

WINTHROP CHEMICAL COMPANY ADDS
WHITE STAR TO E PENNANT

The Winthrop Chemical Company, Inc., New York, was recently awarded a white star to be added to its E flag, in recognition of continued "meritorious service on the production front." The Winthrop Chemical Company is the country's largest supplier of atabrine.

MULTIPLE VACCINES IN GERMANY

According to NPD of February 15 (Germany), German science has discovered a double vaccine, equally effective against scarlet fever and diphtheria, which is already being used in practice. Even a quadruple vaccine has been produced which renders people immune against typhoid, cholera and paratyphoid A and B bacilli.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—Public hearings have been scheduled before a subcommittee of the House Committee on Appropriations on the budget estimate for funds to continue the obstetric and pediatric program for the wives and infants of servicemen. The hearings will be held on April 27 and 28.

Bills Introduced.—H. R. 4445, introduced by Representative Bolton, Ohio, proposes to authorize temporary appointment as officers in the Army of the United States of members of the Army Nurse Corps, female persons having the necessary qualifications for appointment in such corps, female dietetic and physical therapy personnel of the Medical Department of the Army, exclusive of students and apprentices, and female persons having the necessary qualifications for appointment in such department as female dietetic or physical therapy personnel. H. R. 4519, introduced by Representative Fish, New York, proposes an appropriation of \$1,000,000 to provide seeing eye dogs for certain blind veterans. H. R. 4533, introduced by Representative Tolan, California, contemplates the creation of a Chiro-

practic Corps in the Medical Department of the Army. H. R. 4554, introduced by Representative Davis, Tennessee, would authorize the appointment of x-ray technicians as commissioned officers in the Medical Corps of the Army and the Medical Corps of the Navy.

STATE MEDICAL LEGISLATION

New Jersey

Bills Introduced.—S. 156 and A. 295 propose to enact a separate chiropractic practice act and to create an independent board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic.

Rhode Island

Bill Introduced.—S. 210 proposes to authorize the governor to appoint a special blood plasma bank commission to study the feasibility of establishing blood plasma banks in the several counties of the state for such persons as in the judgment of their attending physicians need blood plasma.

WOMAN'S AUXILIARY

New Jersey

The second meeting of the executive board of the New Jersey auxiliary for 1943-1944 was held in the executive offices of the Medical Society of New Jersey at Trenton recently. After a business session the executive board and the presidents of the county auxiliaries were served a buffet luncheon. Following the luncheon Miss Agnes Ohlson of the United States Public Health Service spoke on the Cadet Nurse Recruitment Program. Miss Wilkie Hughes, executive secretary of the New Jersey Council for War Service, spoke on the New Jersey aspects of this program.

Mrs. F. G. Wandell, chairman of Hygeia, reports that over 400 high schools and other educational institutions subscribe to *Hygeia*.

Atlantic County auxiliary held a card party for the benefit of the service men of the England General Hospital March 14 at the Madison Hotel in Atlantic City.

A health meeting sponsored by the Essex County auxiliary and the Contemporary Club of Newark was to be held March 21. Dr. Benjamin Saslow spoke on "Nutrition in Wartime."

The superintendent of the Passaic public schools spoke on "Juvenile Delinquency" at a recent meeting of the Passaic County auxiliary.

The Atlantic County auxiliary met recently at the Madison Hotel, and Miss Arreta Watts of the du Pont Company spoke on "How Chemistry Is Meeting Our Needs Today."

Essex County devoted its January meeting to a discussion of pending legislation. At the February meeting of the Hudson County auxiliary \$50 was given to the Red Cross. At the January meeting of the Camden County auxiliary, held at the home of Mrs. Haines Lippincott, the members were urged to support the coming cancer drive. Rev. H. O. Wyatt, formerly a missionary to India, spoke on "Present Day India."

New York

Mrs. Leslie Sullivan, president of the New York auxiliary, was guest speaker at the annual luncheon in Albany recently. She discussed the Wagner-Murray-Dingell bill.

Albany County auxiliary has a membership of 128 women. A speakers' bureau has been formed with 7 women as speakers,

and over a thousand women have had pending legislation explained to them. At the January meeting Dr. Robert Korn, epidemiologist of the New York State Health Department, spoke on "Tropical Diseases and Their Effects on Public Health." In April the auxiliary plans to collect medical supplies for the Medical and Surgical Relief Committee of America, Inc., New York City.

Nassau County auxiliary made dressings for advanced cancer patients recently; they had a Christmas party for the small patients at the Nassau hospital. Miss Yolanda Lyon of the Bureau of Public Relations of the state society spoke on methods of defeating the pending socialized medicine bill.

Texas

Mrs. A. B. Pumphrey, state president of Texas, in an article in the January issue of the *Texas State Journal of Medicine*, gives briefly the major items of interest to the auxiliary which were discussed at the meeting of the executive council of the state medical association at San Antonio recently.

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

April 15. "Decks Aflame."

Speaker, Capt. French Moore (MC), U.S.N., Washington, D. C.

April 22. "New Lease on Life."

Speaker, Col. Augustus Thorndike, M. C., U. S. Army, Washington, D. C.

April 29. "Winds That Kill."

Speaker to be announced.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Personal.—Dr. and Mrs. John Forrest McKnight, Bradley, observed their fiftieth wedding anniversary February 21.—Dr. Frances C. Rothert, Camden, has been appointed acting director of the division of maternal and child health in the state department of health, effective February 1.

State Medical Meeting in Little Rock.—The Arkansas Medical Society will hold its annual convention at the Marion Hotel, Little Rock, April 17-18, under the presidency of Dr. Samuel J. Allbright, Searcy, and with the Pulaski County Medical Society acting as host. Among the speakers will be:

- Dr. Henry E. Mobley, Morrilton, Surgical Management of Hernias.
- Dr. Arthur Neal Owens, New Orleans, The Applications of Fundamental Principles in the Treatment of Burns.
- Dr. Ira F. Jones, Fort Smith, Caudal Anesthesia.
- Dr. Donovan C. Browne, New Orleans, Cardiospasm: Its Medical Management.
- Dr. Nicholas T. Hollis, Little Rock, Newer Methods of Treating the Mentally Ill.
- Dr. Arthur C. Curtis, State Sanatorium, Tuberculosis Control Program in Arkansas.
- Dr. Rawley M. Penick Jr., New Orleans, The Diagnosis and Treatment of Various Arterial Aneurysms.
- Dr. Carl A. Rovenbaum, Little Rock, Tumor Clinic of the University of Arkansas School of Medicine.
- Dr. Edgar J. Easley, Little Rock, A Brief Summary of the Modern Concepts of Acquired Syphilis.
- Dr. Ludolf N. Bollmeier, Hot Springs National Park, How to Differentiate Emotional Glycosuria from Diabetes Mellitus.

CALIFORNIA

Typhoid in 1943.—There were 167 cases of typhoid reported in California last year, none of which gave substantiating evidence of having been water borne. Forty cases were traced to 14 proved carriers, 9 carriers were responsible for 1 case each and 1 carrier caused 3 cases, according to *California's Health*. Three carriers were the sources of 2 cases each. One carrier was responsible for an outbreak totaling 24 proved cases, 22 of which were recorded in 1943 and 2 in January 1944. This group of 24 cases was in Indians who attended two supper dances where the carrier served food. The second largest group of cases reported last year was in a state institution, where 7 cases were reported. There were 5 cases in one family, with 4 secondary to the first case. Eleven cases were diagnosed in California, but the patients were either ill when they arrived from other states or countries or they were taken ill within four days after their arrival. Two other patients contracted their infection while traveling through more than one county during the incubation period of the disease. It was therefore impossible to allocate these 13 cases to any single locality of California. One group of 3 cases of typhoid occurred among employees of a slaughterhouse, but the source could not be determined. There were six groups of 2 cases each, three groups of 2 cases, each due to a carrier, two groups of 2 cases, each with source undetermined, one group of 2 cases, with the second case secondary to the first. Out of the total of 167 cases recorded there were only 7 known secondary cases. There were 28 typhoid carriers recorded in California last year, 7 of whom were transfers from other states. Two carriers were reported previously as cases, but in 1943 they were determined to be carriers. Four carriers were revealed in individuals who were hospitalized for other reasons but who, on examination, were found to be carriers. Fourteen carriers were the sources of typhoid cases reported in 1943, and 1 carrier was the source of a case in 1940 which was recorded in 1943. No carriers were revealed in the course of food handlers' examinations.

CONNECTICUT

State Medical Meeting in Bridgeport.—The one hundred and fifty-second annual meeting of the Connecticut State Medical Society will be held at the Central High School, Bridgeport, May 2-4, under the presidency of Dr. George M. Smith, Pine Orchard. Among the speakers on the program will be:

- Dr. Francis G. Blake, New Haven, Penicillin.
- Dr. Edward A. Schumann, Philadelphia, Obstetrical Experiences.
- Dr. Homer F. Swift, New York, Rheumatic Fever.
- Dr. John H. Foulger, Wilmington, Del., The Principles of Preventive Medicine in Chemical Industries.

- Dr. Herbert C. Miller Jr., New Haven, Erythroblastosis Fetalis: What Is It?
- Dr. Thomas A. C. Rennie, New York, National Planning for Psychiatric Rehabilitation.
- Dr. James M. Cunningham, Hartford, Some Comments on Psychiatric Rehabilitation.
- Dr. John C. Leonard, Hartford, Some New Developments in Medicine.
- Thomas J. Duffield, B.S., New York, The Value of Uniform Records.
- Dr. Varaztad H. Kazanjian, Boston, Plastic Surgery Following Burns.
- Captain Howard B. Sprague (MC), U. S. Naval Reserve, A Navy Doctor in the South Pacific.
- Dr. Louis H. Bauer, Hempstead, N. Y., The Council on Medical Service and Public Relations of the American Medical Association.
- Dr. Kalci K. Gregory, Providence, R. I., Meningococcus Infections.
- Dr. Edward J. Whalen, Hartford, Chemotherapy in the Treatment of Nasal Sinus Disease.
- Dr. Maynard C. Wheeler, New York, The Measurement and Treatment of Strabismus in Children.
- Dr. Albert Oppenheimer, Laconia, N. H., Disease of the Spine.

A special meeting will be held Wednesday afternoon to organize a woman's auxiliary. Mrs. Eben J. Carey, Milwaukee, president of the Woman's Auxiliary of the American Medical Association, will, among others, discuss "The Purposes of the Woman's Auxiliary." The annual dinner at the Hotel Stratfield will be addressed by Governor Raymond E. Baldwin, Hartford, and Rev. Father Alphonse J. Schwitalla, dean, St. Louis University School of Medicine, St. Louis. The Connecticut Occupational Therapy Association will be addressed during the state society meeting by Mrs. Winifred C. Kahmann, OTR, Washington, D. C., on "Occupational Therapy in Army General Hospitals" and Ensign Harriet M. Jones, OTR, New York, Occupational Therapy Program in a Naval Hospital." A meeting of medical examiners will be addressed by Dr. Walter W. E. Jetter, Boston, on "Postmortem Recognition of Biochemical Disturbances." The Women's Medical Society will also convene during the session.

DISTRICT OF COLUMBIA

Personal.—Dr. James L. Hall was recently appointed superintendent of Freedmen's Hospital, succeeding Dr. John W. Lawlah, dean of the Howard University College of Medicine, who had been serving in both capacities.

Woman Dies from Rabies—Pasteur Treatment Ineffective.—The death of a woman at Gallinger Municipal Hospital, March 17, occurred five months after she had been bitten by a rabid dog. Newspapers reported that the reason the Pasteur treatment proved ineffective may have been that the woman suffered multiple bites about the head.

Army-Navy Night.—The Medical Society of the District of Columbia and its woman's auxiliary sponsored an "Army-Navy Night" on March 24. Addresses were given by Dr. Fred R. Sanderson, president, Medical Society of the District of Columbia; Vice Admiral Ross T. McIntire, Surgeon General of the U. S. Navy, and Lieut. Gen. Alexander A. Vandergrift, the commandant of the United States Marine Corps.

Clinic for Children with Cerebral Palsy.—A new consultation clinic for children suffering from cerebral palsy has been opened by the District of Columbia Society for Crippled Children at its headquarters, 1220 New Hampshire Avenue N.W., Washington. The clinic will be open one day a month and have facilities for about 25 consultations at each monthly session, the services to be free of charge. Dr. Winthrop M. Phelps, medical director of the Children's Rehabilitation Institute, Baltimore, and counselor on cerebral palsy for the National Society for Crippled Children, will supervise the clinic. According to *Medical Annals of the District of Columbia*, Dr. Phelps, formerly professor of orthopedic surgery, Yale University School of Medicine, New Haven, has established clinics in nine states and is now medical director of the state cerebral palsy program of the New Jersey Crippled Children's Commission.

KANSAS

Francisco Memorial Foundation.—A fund is being collected at the University of Kansas School of Medicine to establish the Francisco Memorial Foundation in honor of Dr. Clarence B. Francisco, Kansas City, Mo., professor of clinical surgery at the university, who died on February 23. The fund was started by medical students and faculty members, and it is hoped to accumulate sufficient funds to erect a student union building on the medical school campus in Kansas City. The building would house the medical library, a cafeteria, a recreation center, postgraduate facilities, a dormitory and rooms for visiting physicians. Dr. Francisco, who graduated at the University of Kansas School of Medicine in 1907, became associated with it in 1910.

Course on Cardiac Disorders.—A postgraduate course on cardiac disorders will be conducted April 15-23 under the auspices of the Kansas Medical Society, the University of Kansas School of Medicine and the Kansas State Board of Health.

The lectures will be given by Dr Chauncey C Maher, associate professor of medicine, Northwestern University Medical School, Chicago, and Dr. George A Walker, assistant professor of pathology, University of Kansas School of Medicine. Sessions will be held in Kansas City, April 15-16, Parsons, April 17-18, Salina, April 19-20; Wichita, April 20-21, and Topeka, April 22-23. Topics to be discussed will include thyrotoxicosis and heart disease, anatomical pathology of the heart, cardiovascular renal diseases and congestive heart failure, pathologic anatomy and physiology of hypertension, electrocardiograph in clinical heart disease, heart disease in the surgical patient and heart muscle reserve.

MARYLAND

License Restored.—The license of Dr. Cliff P. Berger, Washington, D. C., to practice medicine in Maryland was restored on February 2. The action was taken after Dr. Berger had received a pardon from the governor of Maryland and because of recommendations from numerous physicians who had been associated with him.

MICHIGAN

The Hickey Lecture.—The annual Hickey Lecture of the Wayne County Medical Society was delivered at a joint session April 3 with the Detroit Roentgen Ray and Radium Society. Lieut. Col. Joseph C. Bell, M. C. A. U. S., and Major Gilbert W. Heublein, M. C. A. U. S., gave the lecture on "Diagnostic Roentgenology in an Army Hospital During the Present War."

Grant for Research in Penicillin.—A grant of more than \$19,000 to the state health department laboratory for research in penicillin production methods is included in the public health bill voted during the recent special legislative session. *Michigan Public Health* believes that the state health department laboratories may be able to develop a means whereby the product can be manufactured at a cost which is practicable and is distributed on a statewide scale.

MISSOURI

State Medical Meeting in Kansas City.—The eighty-seventh annual session of the Missouri State Medical Association will be held at the Municipal Auditorium, Kansas City, April 23-25, under the presidency of Dr. Andrew W. McAlester Jr., Kansas City. Among the speakers on the program will be:

- Col. John T. King, M. C. A. U. S., Heart and Hypertension
- Dr. Peter Heinbecker, St. Louis, Etiology of Hypertension
- Dr. Drew W. Luten, St. Louis, The Heart in Hypertension
- Dr. Edward Massie, St. Louis, Management of the Hypertensive Patient
- Dr. A. Morris Ginsberg, Kansas City, Psychogenic Factors in Hypertension
- Dr. Henry K. Ransom, Ann Arbor, Mich., Abdominal Incisions
- Dr. Roland S. Kieffer, St. Louis, Nutritional Problems
- Dr. William B. Kountz, St. Louis, Special Problems of Poor Surgical Risks, Especially Age
- Dr. Charles F. Sherwin, St. Louis, Selection of the Anesthetic
- Dr. Edward L. Keyes, St. Louis, Sulfonamide Drugs as an Adjunct to Surgery

On Monday evening a banquet will be held at the Hotel Muehlebach in honor of past presidents of the association, at which the speakers will include Rev. Father Alphonse M. Schwitalla, S. J., dean, St. Louis University School of Medicine, St. Louis, who will discuss "The Position of Medical Education in Federalized Medicine." A general meeting Tuesday will be devoted to a series of panel discussions on traumatic surgery, gastroduodenal lesions, abnormal obstetrics and diabetes. A talk on the "Treatment of Leukemia with Radioactive Phosphorus" by Dr. Edward H. Reinhard, St. Louis, will conclude the meeting. The woman's auxiliary to the state association will hold its annual session at the Hotel President, April 23-24. Among the speakers will be Dr. William W. Bauer, Director, Bureau of Health Education, American Medical Association.

NEW JERSEY

The Medical Way.—The name of the official journal of the Medical Society of Cape May County is now the *Medical Way*. The name was chosen in a contest, the winners of which are James Murrin, newspaper editor of Franklin, Pa., and Dr. David B. Allman, Atlantic City, both of whom submitted the name. Both were awarded \$25 war bonds.

Study of Malarial Diseases.—The board of health of Elizabeth has undertaken a study of malaria infections in the city. A part of the educational program includes the dissemination of informative material to local physicians to assist in recognizing the disease and the furnishing to them of outfits for thick and thin blood smears for the laboratory diagnosis

of malaria. The Union County Mosquito Extermination Commission has again this year been granted an appropriation to be used for the prevention of anopheles breeding and to conduct research on *Anopheles quadrimaculatus*.

NEW YORK

Graduate Lectures.—A series of graduate lectures for the Madison County Medical Society, Oneida, opened on March 23 with a talk by Dr. A. Wilbur Duryee, New York, on "The Diagnosis and Treatment of Peripheral Vascular Disease." Others in the series include:

- Richard C. Arnold, Surgeon, U. S. Public Health Service, Early Observations on the Use of Penicillin in the Treatment of Syphilis, March 30
- Dr. Edward A. Bullard, New York, The Diagnosis and Treatment of Pelvic Pain, April 6
- Dr. Albert D. Kaiser, Rochester, Rheumatic Fever—Rheumatic Heart Disease in Children, April 13
- Dr. Harry Gold, New York, Management of the Failing Heart, April 20
- Dr. Harold D. Harvey, New York, Problems of Gastric Cancer, April 27

Cancer Teaching Day.—April 30 has been designated "Cancer Teaching Day" at Ellis Hospital, Schenectady. Among the speakers will be:

- Dr. William H. Woglom, New York, Modern Trends in Cancer Research
- Dr. Arthur Purdy Stout, New York, Tumors of the Peripheral Nerves and the Adipose Tissues
- Dr. Tordyce B. St. John, New York, Carcinoma of the Stomach—Results of Studies in a Surgical Clinic. The Responsibility of the General Practitioner and the Surgeon
- Dr. Hayes Martin, New York, Tumors of the Major Salivary Glands

The program will be presented under the auspices of the Medical Society of the County of Schenectady, the state medical society and the division of cancer control of the state department of health.

New York City

Appointments at Columbia.—The following new appointments to the staff of Columbia University College of Physicians and Surgeons have been announced:

- Samuel Gelfan, Ph.D., assistant professor of physiology
- Dr. Wendell L. Hughes, associate clinical professor of ophthalmology
- Dr. Willis S. Knighton, associate clinical professor of ophthalmology
- Dr. Edgar M. Medlar, associate professor of pathology
- Dr. Maxwell D. Ryan, associate clinical professor of otolaryngology

Alumni Day.—On April 29 "Alumni Day" will be observed at Long Island College of Medicine, Brooklyn. Speakers will include Drs. Emanuel Mendelson, on "Roentgenological Diagnosis of Intraperitoneal Fluid," A. L. Loomis Bell, "Chronic Intermittent Intussusception," and Phillips F. Greene, "China's Attack on Disease." At the annual dinner Mr. E. E. Conroy, U. S. Federal Bureau of Investigation, will discuss "The F. B. I. in Time of War."

Dr. Beeler Named Hospital Administrator.—Dr. James Moss Beeler, formerly medical superintendent of the Grady Hospital and assistant professor of psychiatry, Emory University School of Medicine, Atlanta, Ga., has been appointed hospital administrator of the Flower and Fifth Avenue Hospitals. A graduate of the University of Louisville School of Medicine in 1917, Dr. Beeler's most recent position was director of the department of mental hygiene of the Mississippi State Hospital, Whitfield.

Gifts Honor Memory of Physician.—Mrs. John Eastman Wilson has recently given a sum of money to New York Medical College Flower and Fifth Avenue Hospitals in honor of her late husband, who at one time was professor of diseases of the nervous system at the medical school and had been associated with the college from 1902 to 1918. Dr. Eastman died Dec. 19, 1929. One gift of \$100,000 has been designated as a student loan fund for needy medical students, and the other of \$10,000 has been added to the department of surgery.

Dr. Erdmann Observes Eightieth Birthday.—Dr. John F. Erdmann for many years director and professor of surgery, New York Post-Graduate Medical School and Hospital, Columbia University, observed his eightieth birthday March 27. He was guest at a tea given in his honor by the nurses at the hospital. Dr. Erdmann retired from his teaching position at New York Post-Graduate Medical School in 1934. He is consulting surgeon on the staffs of a number of hospitals. He was born in Cincinnati on March 27, 1864 and graduated at the Bellevue Hospital Medical College in 1887.

Million Dollar Gift to United Hospital Fund.—The Jacob H. and Emma W. Schoonmaker Fund has been created under a gift of one million dollars to the United Hospital Fund of New York from a trust created in 1937 by the late Jacob H. Schoonmaker, New York. The income of the fund is to be added to the annual collection made by the fund and distributed among the eighty-seven hospitals and homes par-

icipating. The remainder of the original trust is divided equally among the Community Service Society of New York, the New York Foundling Hospital, Fordham University and the Kingston Hospital, Kingston.

Dr. Marvin Thompson Chosen President of Warner Company.—Marvin R. Thompson, Ph.D., director of the Warner Institute for Therapeutic Research and vice president of the William R. Warner and Company, Inc., of New York and St. Louis, manufacturers of pharmaceutical products, has been chosen president of the company. Dr. Thompson once served as pharmacologist and later consultant pharmacologist to the U. S. Food and Drug Administration, associate professor of pharmacology, George Washington University School of Medicine, Washington, D. C., and professor of pharmacology and therapeutics, School of Pharmacy, University of Maryland, College Park.

Grant for Research in Industrial Medicine.—The New York Medical College has received a grant of \$30,000 from the Anaconda Wire and Cable Company for research projects in industrial medicine arising out of problems incident to the manufacture of the company's products. The study will determine whether occupational hazards exist and will develop means of giving adequate protection to the workers if necessary. The project is under the direction of Dr. Lindsley F. Cochen, director of the department of public health and industrial medicine, assisted by Dr. Linn J. Boyd, director of the department of medicine, and Dr. Francis D. Spear, director of the clinical pathology laboratories.

Master Plan for Hospitals and Related Facilities.—The planning committee of the Hospital Council of Greater New York plans to undertake this year the preparation of a master plan for hospitals and related facilities, the New York Times reported March 26. Dr. Haven Emerson has been named chairman of the committee to advise the council on the project, and other members include Dr. Jacob J. Golub, vice chairman; Dr. Edward M. Bernecker, commissioner of hospitals, Rev. John J. Bingham, Edward H. L. Corwin, Ph.D., David H. McAlpin Pyle and Edwin A. Salmon, all of the planning committee, and Neva R. Deardorff, Ph.D., Dr. Willis G. Nealley, Brooklyn, and Arthur W. Jones. The scope of the master plan, according to the Times, should show:

All existing hospitals and institutions for the care of the sick which shall have been determined to be satisfactorily located and provide adequate facilities and distribution of clinical services for the future communities to be served.

Those existing hospitals and institutions which are satisfactorily located but require minor changes and additions.

All proposed hospitals and institutions which shall be deemed to be desirable and which, in addition to existing facilities, shall make adequate provision for a comprehensive plan of hospitals, together with recommended locations of each, with sufficient detail of each facility to provide a complete understanding of the services to be contained therein.

Such hospitals as desire to be relocated, closed or merged with other hospitals.

OKLAHOMA

State Medical Meeting in Tulsa.—The fifty-second annual session of the Oklahoma State Medical Association will be held at the Mayo Hotel, Tulsa, April 24-26, under the presidency of Dr. James Stevenson, Tulsa. Among the guest speakers will be:

Dr. Walter C. Alvarez, Rochester, Minn., Nervous Breakdowns and Their Causes.

Dr. Duff S. Allen, St. Louis, Thyrotoxicosis in Older People.

Dr. Cecil K. Drinker, Boston, An Analysis of the Modern Treatment of Severe Burns.

Dr. Harry S. Mustard, New York, Implications of Tropical and Imported Diseases from a Public Health Standpoint.

Other speakers will include:

Major Welborn W. Sanger, M. R. C., Eye Conditions Among Military Men.

Lieut. Col. Earl Rankin Denny, M. C., A. U. S., Some Observations of the Clinical Use of Penicillin.

Lieut. Col. James C. Cain, M. R. C., Peptic Ulcer and Related Conditions.

William E. Graham, P. A. Surg., U. S. Public Health Service, The Significance of Abnormal Spinal Fluid Findings in the Diagnosis and Treatment of Neurosyphilis.

Major Silas H. Starr, M. C., A. U. S., The Present Status of Pain Relief During Labor.

Major Tom Wiley Hodges, M. R. C., Lessons Learned from the Use of the Roger-Anderson Apparatus.

Major William F. Hoyt, M. C., A. U. S., Care of Chest Injuries.

At the president's inaugural dinner dance Tuesday evening Dr. Alfred W. Adson, Rochester, Minn., member of the Council on Medical Service and Public Relations, American Medical Association, will discuss "The Federal Challenge to Practitioners of Medicine." Another feature of the session will be the annual spring meeting of the Oklahoma University Medical School Association. Classes to be honored this year are those of 1914, 1924, 1934 and 1944. Special tribute will be paid to Drs. Robert M. Howard and Everett S. Lain, professors

emeritus of surgery and dermatology and syphilology, respectively, University of Oklahoma School of Medicine, Oklahoma City. The woman's auxiliary to the state association will also convene.

RHODE ISLAND

"Family Physician" Honored.—The East Greenwich Lions Club and friends of Dr. Fenwick G. Taggart gathered at a reception in his honor February 28 in recognition of his forty years' service to the community. In an address as the speaker of the evening Dr. Arthur H. Ruggles, superintendent of the Butler Hospital, Providence, referred to Dr. Taggart as the "old type family physician." Dr. Taggart was presented with a silver bowl and candle sticks as a memento of the occasion. A public tribute was printed in the *Rhode Island Pendulum*, March 2, signed by George R. Hanaford, president of the town council. Dr. Taggart graduated at the University of Vermont College of Medicine, Burlington, in 1903.

SOUTH CAROLINA

Resolution Honors Work of State Health Officer.—The house of representatives on March 9 adopted a resolution commending the work of Dr. James A. Hayne, Columbia, for more than thirty-two years health officer of South Carolina.

TENNESSEE

Dr. Hardison Joins Red Cross.—Dr. Alonzo E. Hardison, director of the division of venereal disease control, Memphis and Shelby County Board of Health, recently resigned to become regional medical director for the American Red Cross, with headquarters in Atlanta, Ga.

VIRGINIA

University News.—Dr. Karl A. Menninger, Topeka, Kan., discussed "Psychiatry in Medicine" at the University of Virginia Department of Medicine, Charlottesville, recently under the auspices of the Phi Beta Pi medical fraternity. The annual Sigma Xi lecture was delivered February 9 by Kenneth C. D. Hickman, Ph.D., research chemist of the Eastman Kodak Company, Rochester, N. Y., on "Low Pressure Distillation and Vitamin Production." Dr. Theodore L. Squier, associate clinical professor of medicine, Marquette University School of Medicine, Milwaukee, addressed the Alpha Chapter of Alpha Omega Alpha, at the school, Charlottesville, February 18, on "Hematologic Manifestations of Hypersensitive States." The University of Virginia Medical Society was addressed February 28 by Dr. Everett I. Evans, Richmond, on "The Mechanisms and Management of Traumatic Shock." Dr. Samuel A. Vest Jr., Charlottesville, was elected president and Dr. Carlton J. Casey, Charlottesville, secretary.

GENERAL

Roentgenologists Plan Joint Session.—The Radiological Society of North America and the American Roentgen Ray Society will meet in joint session at the Palmer House, Chicago, September 24-29.

War Conference of Hospital Association.—The third war conference and the forty-sixth annual meeting of the American Hospital Association will be held at the Statler Hotel, Cleveland, October 2-6.

Pediatric Examinations.—The American Board of Pediatrics will hold a written examination for all applicants taking oral examinations September 22. The examination will be conducted by a monitor. Oral examinations will be held in St. Louis November 8-9 and in New York December 9-10. Additional information may be obtained from Dr. C. Anderson Aldrich, 115½ First Avenue S.W., Rochester, Minn.

Fund for Research in Allergy.—The recent establishment of a research foundation by the American College of Allergists has been announced. The foundation started with individual contributions of \$50 by a certain group of fellows in the college. Voluntary donations from members are acceptable. The college also announced the first annual gift of \$500 to the college from Marcelle Cosmetics, Chicago, to comprise the Marcelle Research Fund. The grant shall continue for a period of five years, and the money is to be used for such research in the field of allergy as the administrators of the fund may deem to be worthy of support.

Winners in National Traffic Safety Contest.—Utah and Aberdeen, S. D., are announced as the grand prize winners in the National Traffic Safety Contest conducted annually by the National Safety Council. All 48 states and 1,297 cities participated in the contest, which covered the calendar year 1943.

The contest rules provide that the national grand awards shall go to the state and city which, in the opinion of the judges, came nearest to doing the most that could be done practically for traffic safety. For five years, beginning in 1939, Aberdeen has not had a single traffic fatality. It has won four first places and one second in its population group, this year winning the grand prize, which for the first time has gone to a city with less than 50,000 population.

Noise Abatement Awards.—The National Noise Abatement Council will make four awards for civic achievement in noise abatement during 1944. An award will be given to the city in each of four population groups which presents the most conclusive evidence of outstanding accomplishment in the elimination of needless street noise and the control of industrial, office and in-the-home noises during the period June 6, 1943 to May 31, 1944 and in the observance of National Noise Abatement Week, April 30 to May 6, 1944. Material submitted as supporting evidence to claims for the awards must be received by the National Noise Abatement Council, 9 Rockefeller Plaza, New York 20, not later than July 1 and may consist of any or all of the following:

Newspaper clippings of news stories, photos, cartoons, features, editorials.

Photographs of civic and special activities, window and store displays.

Scripts of radio announcements and programs, other talks and lectures.

Official statements: photostatic or other copies of proclamations and statements issued.

Posters—car cards: samples or photos with number and method of distribution.

Record of events: dates, names and places—where and when events occurred.

Statement of results: official comment, safety and traffic records, other testimonials.

Any other material or evidence of a supporting nature.

Annual Report of Rockefeller Foundation.—A total of \$7,760,186 was appropriated by the Rockefeller Foundation in 1943 to cover its activities in six major fields; \$2,450,000 was earmarked for public health and \$1,529,000 for the medical sciences. According to the annual report of the foundation, other allocations included \$599,000 for the natural sciences, \$1,068,000 for the social sciences, \$1,055,000 for the humanities, and \$108,000 for the program in China.

The report discusses the progress made in the research in penicillin, crediting the work of Howard W. Florey, Ph.D., professor of pathology, Oxford University, and his associates for pioneering its clinical use.

In 1943 the laboratory at Lagos, West Africa, which had been opened in 1925 for the study of epidemiology of yellow fever and abandoned in 1934 because it was felt that its work could be carried on more effectively at other centers, was reopened to serve as a center for distributing yellow fever vaccine to troops and settlements in West Africa and to constitute a consultative service to the authorities in the British colonies of Gambia, Sierra Leone, the Gold Coast and Nigeria, where yellow fever has long been endemic. One of the main objectives of the new program centering in Lagos is to learn whether the jungle variety of mosquito discovered in South America has its counterpart in West Africa. If this proves to be the case, studies will be made there of the mechanism by which this form of yellow fever is transmitted to man, the work to be tied in with similar research now going forward in South America. The report states that the return to Lagos has a certain symbolic interest for the foundation, for it was in West Africa in 1927 that a blood specimen was taken from a black native named Asibi, who was sick with yellow fever. This specimen was inoculated into a rhesus monkey which had just been received from India. Asibi recovered, but the monkey died of the disease. All the vaccine manufactured since 1937, both by the Rockefeller Foundation and by government and other agencies as well, derives from the original strain of virus obtained from this humble native.

In its work on typhus the foundation, which had been concerned with the body louse as the principal carrier, sent, with the approval of the army, a typhus team to Algeria. Two extensive demonstrations there of louse control resulted in a new technic now being developed by which the insecticide is applied to individuals in a way which speeds up the process and makes possible the mass treatment of communities. The foundation is still carrying on its laboratory work on various strains of typhus in the hope of developing an effective vaccine.

In 1943, 107 men and women of Latin American countries studied on fellowships provided by the Rockefeller Foundation. Some of the appointees continued from 1942; 46 were new fellows who began their studies in 1943. A comparison of the 1943 program with that of twenty years ago, the report points out, finds public health and medicine still the dominant interests but no longer occupying the entire stage. Of the

107 fellowships active this year, 53 were in public health, 25 in medicine, 18 in the natural sciences and 11 in the humanities. Reviewing the fellowship appointments since they were created in 1917, it is found that the field of public health has claimed 328 Latin American fellows, medicine 112, the natural sciences 22, the humanities 32 and the social sciences 7—a total of 501. The fellows have come from nineteen countries, their fellowships representing a total expenditure of \$1,345,842.

The report states that Dr. Bernardo A. Houssay, professor of physiology, University of Buenos Aires, who, with others, was dismissed from his post for signing a petition to the government asking for "effective democracy and American solidarity," is continuing his research in a small laboratory established for him by an Argentine foundation. The Rockefeller Foundation has made a grant for equipment and supplies and for stipends to a number of scientists who wish to work with him.

The foundation declined 920 applications for financial aid in 1943 as compared with 1,121 in 1942. Some of the applications represented projects of interest which were rejected because other opportunities seemed more promising.

According to the report, Dr. Charles N. Leach, of the Far Eastern field staff of the International Health Division, and Mr. C. G. Copley, of the foundation's Manila office, returned to America on the exchange ship *Gripsholm* in December 1943. Both had been interned since the fall of Manila. At that time the Japanese looted the foundation's office and destroyed all records. In China, Dr. Henry S. Houghton, director of the Peiping Union Medical College, and Mr. Trevor Bowen, its comptroller, are still imprisoned, and hope for their early return seems slight. The buildings of the college have been taken over by the military and the greater part of their contents removed.

CANADA

Gift to Study Industrial Diseases.—The University of Western Ontario, London, Ont., has received \$100,000 from Mrs. William M. Gartshore, widow of the former president of the McClary Manufacturing Company, to "further the knowledge of disease caused by the conditions and hazards incidental to industry, so that such conditions may be improved and such hazards may be removed."

Canadian Medical Association Meeting.—The seventy-fifth annual meeting of the Canadian Medical Association will be held at the Royal York Hotel, Toronto, May 22-26, under the presidency of Dr. D. Sclater Lewis, Montreal, Que. The preliminary program mentions a series of round table conferences and section meetings on the specialties. General sessions will be addressed, among others, by Drs. Nicholson J. Eastman, Baltimore, on "The Management of Preeclampsia"; Russell B. Robson, Windsor, Ont., "Medical Care of the Industrial Worker," and Roy D. McClure, Detroit, "The Management of Breast Tumors."

FOREIGN

Deaths from Influenza Decrease Fifty Per Cent in Fortnight.—A recent report indicates that during the last week of December 1943 influenza mortality continued the decline begun earlier in the month in the large cities of England and Wales. It was stated that 464 deaths were attributed to the disease, against 1,109 and 690 during the two preceding weeks, accounting for a decline of 58 per cent in a fortnight.

Proposed Center for Treatment of Eye Diseases.—It is planned to establish at Oxford University a center for research and postgraduate study for the prevention of blindness and the better treatment of diseases of the eye. The Ophthalmological Research Endowment Committee plans to raise £250,000 for the purpose. *Science*, March 17, reports that about £26,000 toward the founding of a department of ophthalmology has been collected.

CORRECTION

Amputation with Refrigeration Anesthesia.—An abstract under this heading published in *THE JOURNAL*, March 18, page 808, read in part as follows: "The mortality for such amputations was formerly as high as 65 per cent. The ice and ligation method reduced this to 15.5 per cent in 45 patients who underwent 62 operations. The mortality for thigh amputations in this series was 13.3 per cent." These figures referred not to the author's series but to those of the City Hospital of New York as quoted by the author. The figures should have read "In our series the mortality was 28.5 per cent. A few years ago in the same two hospitals our mortality over a ten year period for all diabetic amputations was 75 per cent."

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 11, 1944.

The Hospitals and the National Health Service

The proposed national health service regulates every field of medical practice, including every form of institutional care—not only all general and special hospitals but also sanatoriums for tuberculosis, accommodations for the chronically sick and infirm, for rehabilitation, for infectious diseases and for mental disorders. An important problem is the planning of collaboration between voluntary and municipal hospitals. At present these are independent and have originated in different ways. The beginning of the voluntary hospitals can be traced to the houses for the leprosy a thousand years ago and to the charitable movement begun by Pope Innocent III in the twelfth century and typified by the foundation in London of St. Bartholomew's Hospital in 1123. In modern times the voluntary hospitals have been founded and supported by voluntary subscriptions and donations. Thus the famous institution known as Guy's Hospital was founded by a bookseller named Guy, who endowed it with his fortune. All the British medical schools are attached to voluntary hospitals, and the advances of British medicine have mainly been the result of work performed in them.

The municipal hospitals have a different and much later origin. They originated in infirmaries for the chronically sick and infirm, established by law. Under the Local Government Act of 1929 many of these were converted into modern hospitals, with staff and apparatus which can rival the best voluntary hospitals. But they do not have the prestige of the voluntary hospitals. No medical schools are attached to them, and they have not yet had time to make medical history, though some excellent work has emanated from them. The need for cooperation between the two sets of hospitals under the unifying force of the national health service is obvious. Detailed surveys directed by the Ministry of Health are now proceeding. From these will come plans for the various areas. No voluntary hospital will be compelled to participate in the scheme for its area, but hospitals doing so will have to observe certain conditions which have been laid down. A new suggestion is that expert regional panels should be used for advice on the appointment of senior medical staffs. Hospitals agreeing to take part will receive payment for services rendered, and teaching hospitals may receive special financial assistance. But voluntary hospitals will still have to rely in part on the support of the public.

Exclusion of Women Students from Medical Schools

The right of women to enter the medical profession was won only after a long struggle, but complete equality with men has not yet been attained. In London there are twelve medical schools; one school admits only women students, two take a small proportion of women and the remaining nine have expressed inability to take women. In a letter to the *Times*, Sir Ernest Graham-Little, dermatologist and member of Parliament, points out that this denial of equal opportunities for the medical education of women conflicts with the recognized policy and tradition of London University, of which the medical schools are constituents. London is the pioneer university in admitting women to higher education, and this denial has caused grave disquiet in the university senate, of which Graham-Little is a member. In 1928 in conjunction with a well known surgeon, the late Mr. Walter Spencer, he brought forward a motion for an inquiry on the subject. A committee

was appointed and decided in favor of coeducation but did not recommend any drastic change. They recognized that there were economic difficulties which had largely governed the rejection of women students by the majority of London medical schools.

The war has produced an increasing demand for women doctors, and this again brings up the subject of greater facilities for the medical education of women. Graham-Little brought it before Parliament recently, but the minister of health declared himself unable to press acceptance of women on medical schools. He pointed out that the matter would engage the attention of an interdepartmental committee on medical education which he had set up. The senate of London University appointed a highly authoritative committee to report on the desirability of providing facilities for the medical education of women. Six of the seven members of the committee recommended the opening of all London medical schools to women on terms of equality with men. By an overwhelming majority the senate approved this. The *Times* states that as a result all the nine schools which now exclude women will probably admit them. But because of the complexity of the arrangements which will have to be made, the committee's recommendation is not likely to come into full effect until some years after the war. For one thing a considerable extension of buildings will be necessary to avoid providing women's facilities at the expense of the men. This might impede the flow of new doctors, which is of great national importance.

Extension of the Roehampton Artificial Limb Center

An extension of the Roehampton Limb Fitting Center was recently opened by the Chinese ambassador, Dr. Wellington Koo, who described the hospital as a fascinating and inspiring story of successful endeavor in a practically new field of service to humanity. It had restored to the injured, through the emphasis on their status as useful members of the community, that sense of dignity and self respect without which life became a burden, he stated. The new addition would be of special interest to the United Nations, he pointed out, as it made available to them the splendid facilities of the institution for making and fitting artificial limbs. The ambassador recognized that it was a gracious gesture for Great Britain to share with the Allies the knowledge, skill and experience acquired in thirty years of limb fitting.

Penicillin Research

Since the discovery of penicillin, Lord Nuffield, the automobile magnate who is well known for his gifts to medicine, has been interested in its antibacterial properties for the cure of disease. At his suggestion the Nuffield Provincial Hospitals Trust early in 1943 undertook to make grants of \$11,500 per annum for a period of five years toward the remuneration of the team of researchers working under Professor Florey at Oxford. The University of Oxford accepted these grants. This action has been taken by the trust with the concurrence of the Medical Research Council, which has been supporting the work for several years and is continuing to make a substantial grant for research expenses. Subsequently the trust also agreed to make substantial grants to enable the penicillin treatment of meningitis, abscess of the brain and other pyogenic diseases.

The Royal Commission on Population

The names of the members of the Royal Commission on Population and of its technical committees on the statistical, economic and biologic aspects of the population problem have recently been published. The statistical committee comprises well known writers such as A. M. Carr Saunders, D. V. Glass and R. R. Kuczynski. The last named member is distinguished for the introduction of "Kuczynski's unit," which isolates the factor on which the trend of population depends; it is called the "net reproduction rate." This expresses the number of

women in the next generation who will replace the women of reproductive age of this generation, if birth and death rates remain the same. If the net reproduction rate is unity, the population is exactly reproducing itself; if it is less, the population must diminish. Our reproductive rate in 1933 has been calculated at 0.734, less than three fourths of the rate necessary to sustain the present population.

BUENOS AIRES

(From Our Regular Correspondent)

March 4, 1944.

Endocrine Therapy in Cancer of the Breast

Dr. Erico Fels of Buenos Aires administered testosterone propionate to 3 patients with cancer of the breast. In none of the cases was the cancer cured. However, all the patients greatly improved. The degree of improvement depended on how soon in the course of the disease the treatment was administered. One patient had a uterine fibroma which disappeared in the course of the therapy. The second patient resorted to the therapy late in course of the disease. The improvement was moderate. The third patient had a cancer in the form of a cuirass. She is still under treatment. The progress of the big ulcer stopped after treatment was undertaken; the amount of fetid secretion diminished. In the microscopic preparations of the first case, after administration of testosterone propionate, a great proliferation of fibrous tissue was encountered, which was abundant in comparison to that observed in the biopsy taken before administration of the therapy. The fibrous tissue surrounded the focus of cancer. The tumor cells did not show any injury. Fels believes that testosterone propionate stimulates an acute proliferation of fibrous tissue which blocks the tumor cells and prevents their progress to the neighboring tissues. A direct effect on the substance of the tumor itself has not been proved as yet. The author advises further observations to verify the good results of this treatment.

Microflora of Meconium

Drs. Carlos P. Montagna and Maria S. Cataldi of the National Institute of Nutrition have reported their observations of 44 samples of meconium. The newborn infants were normal. Thirty-five were born in normal delivery, whereas 9 were delivered by cesarean section. The age varied from 5 minutes to 96 hours. Bacteria were present in all the samples of meconium; the amount increased with the age of the infant. The meconium contained enterococci in 93 per cent of the cases, colibacilli in 63 per cent, lipolytic bacteria in 50 per cent, bacteria which slowly fermented lactose in 47 per cent, proteolytic bacteria in 34 per cent, sporulated and nonsporulated anaerobes in 34 and 11 per cent respectively, fungi in 18 per cent and yeasts in 9 per cent of the cases. *Lactobacillus bifidus* was found in the meconium of 45 newborn infants. It was encountered twenty-four hours after birth in the group of normal deliveries and after forty-eight hours in the group of infants from cesarean sections. It was encountered in all cases before the infant received food. The authors concluded that the microscopic flora of the meconium is the same in groups of infants from normal deliveries and from cesarean section.

Public Health in Chile

The services of public health in Chile are distributed through three channels: the Department of Social Aid and Beneficence, the National Department of Public Hygiene and Sanitation and the Department of Social Work. The Department of Beneficence provides medical care, drugs and social aid to the poor. It supports and controls the national asylums and hospitals. The National Department of Public Health and Sanitation is concerned with the sanitation of the country, the prevention and control of epidemics and contagious disease, the organization

and maintenance of national sanitary personnel and the care of international health. It is concerned with various aspects of the protection of the individual, the family, the mother and her child. The centers of social insurance provide protection for the health of workers, civil employees of the state and members of the various armed forces up to a total number of 1,500,000.

One of the most important social insurance organizations is the Caja de Seguro Obligatorio de Enfermedad e Invalidez, which was founded in 1825. This organization provides insured workers and their wives and children up to the age of 2 years with medical care and medicines for therapeutic and preventive purposes. The organization also provides maternity care to the workers' wives, pensions to the family during illness of the wage earner and periods of rest to patients and nursing mothers. The monthly pension is equivalent to the whole monthly salary of the insured. Disability of the insured is compensated with a life pension. A retirement pension becomes effective at ages varying from 55 to 65 according to the age at which the insurance started. From 1925 to 1931 the insured was permitted to choose his physician. Later on, consulting offices were established in various zones of the country. The insured receive proper attention in the consulting offices, which are staffed by groups of appointed physicians. The consulting offices have equipment and facilities for giving general and specialized care and medicines to the insured. The organization also has its own pharmacies and dental and other laboratories. A movement to extend the benefits of social insurance to people living in rural areas was started recently.

Puerperal Inversion of Uterus

Dr. Victorio Monteverde, professor of gynecology of the Faculty of Medicine of the University of La Plata and dean of the faculty and head of the Center of Maternity and Social Assistance of the Hospital Piñero of Buenos Aires, with the collaboration of Dr. Diego Taylor Gorostiago recently published an article on the case of a multiparous woman with complete inversion of the uterus due to traction of the retained membranes after delivery. There was no shock. The inverted structure was introduced in the vagina. An operation was performed two days later. It consisted in exteriorization of the uterus, opening of the posterior aspect of the uterus, beginning at the neck and following it in an extension of 5 centimeters, and reinversion of the uterus. Because of the friability of the uterus, the lips of the surgical wound were only put in contact and peritonized, without suturing. The structure was powdered with azosulfamide and replaced after suturing of a 3 centimeter laceration on the anterior aspect, which occurred during the operation. A drainage tube was left in the Douglas cul-de-sac for forty-eight hours. A transfusion of total blood was administered. The postoperative period was normal. A small embolism occurred nine days later, after which the patient recovered fully.

Marriages

JERMAN WALTER ROSE JR., Henderson, N. C., to DR. GRACE MARIE COMARATTA of Harrisburg, Pa., in Pensacola, Fla., February 9.

NORMAN R. GOLDSMITH, Bethesda, Md., to Miss Emphila Fisher of North Judson, Ind., in Washington, D. C., March 24.

JOHN K. CHORLOG, Madison, Wis., to Mrs. Lydia F. McIntyre of Grand Forks, N. D., in Minneapolis, February 14.

STANLEY C. CLADER, Washington, D. C., to Miss Sue Ross Welch in New Orleans, March 11.

ORREN BOND LANDRUM to DR. LYDIA VIOLA WATSON, both of Dyersburg, Tenn., March 18.

JOHN M. CAMERON, Faunsdale, Ala., to Miss Harriet Connor of Peoria, Ill., March 11.

CARLE H. HOLMSTROM to Miss Estelle Filipi, both of Warren, Minn., March 16.

Deaths

Warren Taylor Vaughan * Richmond, Va., authority on allergy, died at his home, April 2, aged 51.

Dr. Vaughan was born in Ann Arbor, Mich., Feb. 22, 1893. He entered the University of Michigan Medical School, where he graduated in 1916. He served his internship at the Peter Bent Brigham Hospital, Boston. He was in the medical corps of the U. S. Army from 1917 to 1919, concluding his service with the rank of lieutenant colonel. While overseas he was chief of medical service at Camp Hospital 41, American Expeditionary Forces, Is-sur-tille, France. In 1920, ending a year as assistant in preventive medicine and hygiene at Harvard Medical School, Boston, Dr. Vaughan began the practice of medicine in Richmond, specializing in allergy. With Dr. W. Randolph Graham he founded the Vaughan-Graham clinic, known for its work in allergy diseases. It was in Richmond that Dr. Vaughan was instrumental in alleviating the allergy which affected Adm. William F. Halsey. A rash had incapacitated Admiral Halsey but Dr. Vaughan's treatment prepared him for his command in the Solomons in November, where he won a decisive victory against the Japanese.

Dr. Vaughan was the son of the late Dr. Victor C. Vaughan, once President of the American Medical Association and for many years closely allied with the association's activities. The late Dr. Victor C. Vaughan Jr. was his brother. Dr. J. Walter Vaughan, Richmond and Henry F. Vaughan, Dr.P.H., Ann Arbor, are also brothers. He leaves four sons, Warren T. Jr., Boston, and Victor C. 3d, New Haven, Conn., both of whom are physicians, and John H. and David Vaughan, students at Harvard Medical School.

Dr. Vaughan was a member of numerous organizations, including the Southern Medical Association, American Society of Clinical Pathologists, American Rheumatism Association, Society for Investigative Dermatology, International Society of Gastroenterology and the Virginia Academy of Science. He was an honorary member of the Institute of the Practice of Medicine, Barcelona, Spain, and the Society for the Study of Allergy, Argentina. He had been past president, vice president and secretary-treasurer of the American Association for the Study of Allergy and president of the Society for the Study of Asthma and Allied Conditions, and vice president of the Medical Society of Virginia, 1931-1932. He was a member of the committee on aerobiology of the National Research Council, director of the Research Council on Problems of Alcohol, and a fellow of the American Association for the Advancement of Science, serving since 1938 as a member of its council. He served on the advisory committee to the Committee on the Costs of Medical Care.

Certified as a specialist by the American Board of Internal Medicine, Dr. Vaughan's chief interest centered in the field of allergy. In addition to numerous articles on the subject, he was the author of "Influenza, an Epidemiologic Study," 1921; "Allergy and Applied Immunology," 1931 and 1934; "Practice of Allergy," 1939 and 1943; "Primer of Allergy," 1939, and "Strange Malady," 1941. He was editor of the *Journal of Laboratory and Clinical Medicine*, a position first held by his father, associate editor of the *Journal of Allergy*, member of the editorial board of the *American Journal of Digestive Diseases* and the *American Journal of Clinical Pathology*, and collaborating editor of *Folia clinica chimica et microscopica* (Bologna, Italy). He was once a member of the editorial board of the *Review of Gastroenterology* and of the *American Journal of Syphilis, Gonorrhea and Venereal Diseases*.

In 1941 the University of Michigan Medical School, Ann Arbor, where his father had served as dean for many years, awarded Dr. Vaughan the honorary degree of master of science for his "contributions to internal medicine and more particularly his notable studies in allergy."

Oswald Evans Denney * Senior Surgeon, U. S. Public Health Service, Galveston, Texas; University of Pennsylvania Department of Medicine, Philadelphia, 1913; resident physician at Philippine General Hospital, 1913-1914, and San Lazaro Hospital, Manila, 1914-1915; resident physician and later chief, Culion Leper Colony, Philippine Islands, from 1915 to 1919; executive officer of the fourth district, U. S. Public Health Service, 1919-1920; medical officer in charge of the National Leprosarium, Carville, La., from 1921 to 1935; chief quarantine officer of the Panama Canal Zone from 1936 to 1939; traveling representative for the Pan American Sanitary Bureau in 1940; fellow of the American College of Physicians; member of the American Society of Tropical Medicine, Association of Military Surgeons of the United States and the International Leprosy Association; since 1940 medical officer

in charge of the U. S. Marine Hospital and chief quarantine officer in Galveston; died February 19, aged 58, of pulmonary fibrosis due to old pulmonary disease.

Walter Bernard Coffey, San Francisco, died March 25, aged 75. He graduated from the Cooper Medical College, San Francisco, 1889. He was a member of the California Medical Association and at one time councilor of the Sixth District; also a fellow of the American College of Surgeons. Dr. Coffey was awarded the degree of doctor of laws from St. Mary's College, Oakland. He was a member of the staff and formerly president of St. Francis Hospital and served as chief surgeon of the Dollar Steamship Company and for many years as surgeon for the Southern Pacific Railroad and chief surgeon and general manager of the Southern Pacific Hospital. He was also said to be the first director of the Municipal Health Service System. In these positions he developed great influence and was for many years an important leader of medicine in California. In recent years his name had been associated with the promotion of the Coffey-Humber technic for treating cancer.

Curtis Campbell Mechling * Pittsburgh; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; specialist certified by the American Board of Surgery; member and past president of the American Proctologic Society; fellow of the American College of Surgeons; served as a captain in the medical corps of the U. S. Army during World War I; professor of proctology at the University of Pittsburgh School of Medicine and head of department of proctology at Falk Clinic; a member of the consulting staffs at Magee and Homestead (Pa.) hospitals; proctologist at Pittsburgh Diagnostic and Pittsburgh Skin and Cancer Clinics; senior staff proctologist at St. Francis Hospital and the Presbyterian Hospital, where he died March 1, aged 69, of heart disease.

Samuel Broders Moore, Alexandria, Va.; Georgetown University School of Medicine, Washington, D. C., 1897; member and formerly vice president of the Medical Society of Virginia; past president of the Alexandria City Medical Society and the Northern Virginia, District of Columbia and Maryland Medical Society; fellow of the American College of Surgeons; for many years surgeon for the Southern Railway System, Chesapeake and Ohio Railroad and the Richmond, Fredericksburg and Potomac Railroad as well as the Fruit Growers Express; served as chief surgeon, Alexandria Hospital; died March 15, aged 71, of coronary thrombosis with pulmonary edema.

Ernest Southerland Bulluck * Wilmington, N. C.; University of Maryland School of Medicine, Baltimore, 1911; past president of the New Hanover County Medical Society; formerly vice president of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; served in the medical corps of the U. S. Army during World War I; surgeon, Community Hospital; on the courtesy staff, James Walker Memorial Hospital; consulting surgeon, Wilmington Red Cross Sanatorium; founder and medical director, Bulluck Hospital, where he died March 13, aged 55, of coronary thrombosis.

Henry Robert Gledhill * Jerseyville, Ill.; College of Physicians and Surgeons, New York, 1894; past president of the Jersey County Medical Society; recently a member of the examining board of the Jersey County Selective Service; secretary of the county draft board during World War I; for many years a member of the board of education, serving two terms as president of the Jersey township high school; served on the board of directors of the Jerseyville Public Library and as a member of the George Washington Educational Fund; died February 12, aged 75, of cerebral hemorrhage.

William Parr Davidson * Decatur, Ill.; Louisville (Ky.) Medical College, 1897; past president of the Moultrie County Medical Society; first lieutenant in the medical officers reserve corps during World War I; chief surgeon, Illinois Masonic Home, Sullivan, from 1903 to 1914; local surgeon for the Illinois Central Railroad from 1910 to 1925 and the Chicago and Eastern Illinois Railroad from 1915 to 1923; on the staffs of the Decatur and Macon County Hospital and St. Mary's Hospital, where he died February 10, aged 72, of pulmonary edema, myocardial failure and coronary occlusion.

Marie K. Formad, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1886; formerly clinical professor of gynecology at her alma mater; served with the women's overseas unit for fourteen months in France during World War I and was decorated by the French government; in 1936 the Marie K. Formad Endowment Fund was established at the Woman's Hospital, where she had been chief of the gynecologic staff and later a member of the consulting staff; died in the Friends Hospital February 21, aged 83, of coronary artery disease and arteriosclerosis.

Edgar Gordon Cuddeback * Port Jervis, N. Y.; Cornell University Medical College, New York, 1906; examining physician for the draft board; vice president and a director of the National Bank and Trust Company of Port Jervis, a director of the Port Jervis Savings and Loan Association and of the Port Jervis Hotel Corporation; a member of the executive committee of the Minisink Valley Historical Society; for many years surgeon for the Erie Railroad; on the staff of St. Francis Hospital, where he died February 10, aged 61, of congestive heart disease.

George W. Larendon, Kerrville, Texas; Jefferson Medical College of Philadelphia, 1889; member of the State Medical Association of Texas; formerly a major in the medical corps of the Texas National Guard; served during World War I; lieutenant colonel in the medical reserve corps of the U. S. Army, not on active duty; at one time health officer of the city of Houston and Harris County; served as deputy state health officer; formerly on the staffs of St. Joseph's Infirmary and the Memorial Hospital; died in Houston February 18, aged 75, of uremia.

Frank Clemm Adams * Yellow Springs, Ohio; Cincinnati College of Medicine and Surgery, 1901; past president of the Greene County Medical Society; died in the McClellan Hospital, Xenia, February 12, aged 79, of arteriosclerotic heart disease and diabetes mellitus.

William Pitt Baldwin * New Haven, Conn.; Yale University School of Medicine, New Haven, 1890; New York Homeopathic Medical College and Hospital, New York, 1891; fellow of the American College of Surgeons; at one time a member of the board of councilmen, an alderman, representing the first ward, and a member of the city park commission; consultant, Charlotte Hungerford Hospital, Torrington; consultant in surgery, Grace Hospital, where he died February 5, aged 76, of pneumonia.

Willard Asa Bates * Littleton, N. H.; Dartmouth Medical School, Hanover, 1901; served in the medical corps of the U. S. Army during World War I; on the staff of the Littleton Hospital; president of the Lions Club; died suddenly February 8, aged 66, of cerebral hemorrhage.

Gerrit Judd Bennett, Waterloo, Iowa; Kansas City (Mo.) Medical College, 1895; died February 6, aged 84, of a self-inflicted bullet wound.

Elbert Amsden Bing, Marshall, Ark.; St. Louis University School of Medicine, 1906; member of the Arkansas Medical Society; past president of the Searcy County Medical Society and the Ninth Councilor District Medical Society; died February 2, aged 67, of heart disease.

Frank Wheeler Braden * Washington, D. C.; Georgetown University School of Medicine, Washington, 1895; for many years examining physician and surgeon for the Standard Oil Company and police surgeon for the District of Columbia; served as examiner for the Panama Canal Commission; died February 19, aged 72, of ruptured aortic aneurysm.

Cerilda Niswonger Bromley, East St. Louis, Ill.; Woman's Medical College, Chicago, 1891; died February 4, aged 78, of acute dilatation of the heart, arteriosclerosis and chronic myocarditis.

Joseph Cecire, Newark, N. J.; Long Island College Hospital, Brooklyn, 1909; died February 3, aged 67, of coronary occlusion, hypertension and arteriosclerosis.

Cono Ciuffa * Chicago; Northwestern University Medical School, Chicago, 1927; formerly a Methodist minister; for many years clinical assistant in surgery at his alma mater; served as senior physician on the staff of the Cook County Infirmary, Oak Forest, Ill.; on the staffs of the Walther Memorial and Grant hospitals; member of the chamber of commerce of Park Ridge, Ill.; died suddenly February 11, aged 50, of cerebral hemorrhage.

Celia O. Clemans, Dover, Ohio; Homeopathic Hospital College, Cleveland, 1893; died in the Elyria Memorial Hospital, Elyria, February 13, aged 83, of generalized arteriosclerosis and hypertension.

Benjamin Myron Cohen, Cambridge, Mass.; Tufts College Medical School, Boston, 1927; died suddenly February 9, aged 41, of acute dilatation of the heart.

Hugh Francis Crawford * Memphis, Tenn.; Memphis Hospital Medical College, 1903; assistant professor of medicine at the University of Tennessee College of Medicine; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the National Gastroenterological Association; served as attending physician, John Gaston, Baptist Memorial and Methodist hospitals; on the editorial board of the *Review of Gastroenterology*; died February 18, aged 61, of tuberculosis.

Edward Joseph Cronin, Boston; Tufts College Medical School, Boston, 1921; head of draft board number 37, Allston, Mass.; junior chief of medical staff and secretary of staff, St. Elizabeth's Hospital; died in the Cardinal O'Connell House of the hospital February 11, aged 46, of acute disseminated tuberculosis.

Volney Nevin Fackler * Richmond, Ind.; State College of Physicians and Surgeons, Indianapolis, 1907; died February 1, aged 71, of coronary occlusion.

Leslie Freudenthal * Gridley, Calif.; University of California Medical School, San Francisco, 1926; served during World War I; member of the Gridley Rotary Club; died in an Oroville hospital March 1, aged 44, of injuries received in an automobile accident.

Realious Farrow Goolsby, Chicago; Meharry Medical College, Nashville, Tenn., 1913; on the staff of the Provident Hospital; died February 3, aged 59, of carcinoma of the brain.

Solomon Greenbaum, Newark, N. J.; Bellevue Hospital Medical College, New York, 1889; for many years on the staff of the Beth Israel Hospital; died February 24, aged 85, of arteriosclerosis.

Delbert Davis Hamlin * Marlboro, Ohio; University of Louisville (Ky.) School of Medicine, 1932; on the staffs of the City Hospital, Alliance, and the Mercy Hospital, Canton; died February 17, aged 39, of cardiac occlusion.

Joseph Augustus C. Hartman * Eggertsville, N. Y.; University of Buffalo School of Medicine, 1920; died in the Millard Fillmore Hospital, Buffalo, recently, aged 46, of multiple neuritis and bulbar paralysis.

Jacob Abraham Hartmann * St. Louis; Washington University School of Medicine, St. Louis, 1896; served as autopsy physician to coroner city of St. Louis; served during World War I; died in St. Luke's Hospital February 3, aged 74, of common duct stones and perforation of bowel.

Frank T. Harvey, Milford, Mass.; New York Homeopathic Medical College and Hospital, New York, 1893; formerly physician in charge of the Harvey Hospital; honorary member of the staff of the Milford Hospital; died in the Worcester Hahnemann Hospital, Worcester, February 1, aged 77, of coronary thrombosis and pneumonia.

Charles Higby Hoffhine * Columbus, Ohio; Starling Medical College, Columbus, 1905; at one time instructor in ophthalmology at the Ohio State University College of Medicine; on the staff of the Grant Hospital, where he died February 8, aged 60, of heart disease.

Walter Chester Kite * Milton, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; member of the New England Pediatric Society; served on the local board of health; for many years on the staffs of the Milton Hospital and Convalescent Home and the Boston Home for Incurables; died February 5, aged 79, of coronary thrombosis.

Louis Landman * New York; New York Homeopathic Medical College and Flower Hospital, New York, 1918; clinical assistant, department of surgery, New York Medical College, Flower and Fifth Avenue Hospitals; member of the staffs of the Misericordia and Metropolitan hospitals; died February 7, aged 54, of malignant hypertension.

Joseph Verner Leech * Pittsburgh; University of Pittsburgh School of Medicine, 1928; on the staff of the Columbia Hospital, Wilkensburg, where he died February 9, aged 47, of Hodgkin's disease.

John D. Lindsay, Spring City, Tenn.; Chattanooga Medical College, 1901; died in the Chamberlain Memorial Hospital, Rockwood, January 18, aged 67, of heart disease and pneumonia.

Cornelius D. Mackey, Chicago; University of Buffalo School of Medicine, 1889; member of the Illinois State Medical Society; died February 27, aged 83, of chronic myocarditis.

John Galbraith Mackey * San Fernando, Calif.; University of Southern California College of Medicine, Los Angeles, 1898; founder and owner of the San Fernando Hospital, where he died February 11, aged 72, of cerebral hemorrhage.

Charles Mackin MacNelly * Weatherford, Texas; University of Nashville (Tenn.) Medical Department, 1893; past president of the Palo Pinto-Parker Counties Medical Society; died February 5, aged 69, of coronary occlusion.

Charles Benton Marshall, Nitro, W. Va.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1920; member of the West Virginia State Medical Association; formerly an assistant surgeon in the U. S. Public Health Service reserve; died in the University Hospital, Baltimore, February 5, aged 49, of cerebral hemorrhage.

Henry Allen May * Washington, Mo.; Beaumont Hospital Medical College, St. Louis, 1894; formerly secretary of the Franklin County Medical Society; on the staff of St. Francis Hospital; physician for the Missouri Pacific Railroad; died January 31, aged 71, of chronic myocarditis.

James A. McCollam, Uhrichsville, Ohio; Starling Medical College, Columbus, 1890; member of the Ohio State Medical Association; past president and secretary of the Tuscarawas County Medical Society; served as the first health commissioner of Uhrichsville and for three terms as president of the board of trade; founder and formerly head of the Uhrichsville high school library association; member of the chamber of commerce; died March 13, aged 75, of acute coronary occlusion.

Wyatt Young McDaniel * Taylors, S. C.; Chattanooga (Tenn.) Medical College, 1900; died January 21, aged 70, of arteriosclerosis and cerebral hemorrhage.

Guy Tingley Meek, Bexley, Ohio; Starling Medical College, Columbus, 1896; member of the Ohio State Medical Association; served as a captain in the medical corps of the U. S. Army during World War I; from 1919 to 1932 medical examiner for the U. S. Veterans Administration; on the staff of St. Francis Hospital, Columbus; died January 24, aged 69, of carcinoma of the right side of the kidney and liver.

D. Wesley Moore, Jellico, Tenn.; University of Louisville (Ky.) Medical Department, 1887; member of the Tennessee State Medical Association; formerly mayor of Jellico; died January 22, aged 83, of pneumonia.

John Thomas Mosser, Caneyville, Ky.; Hospital College of Medicine, Louisville, 1907; died January 27, aged 68, of pneumonia.

Charles Light Mulherin, Newbern, Tenn.; Vanderbilt University School of Medicine, Nashville, 1910; died in the U. S. Public Health Service Hospital, Lexington, Ky., January 23, aged 57, of carcinoma of the digestive tract.

Roscoe Damon Perley * Melrose, Mass.; Harvard Medical School, Boston, 1896; for many years on the staff of the Melrose Hospital; formerly on the staffs of the Massachusetts General and Boston Lying-in hospitals, Boston; died January 21, aged 80, of heart disease.

Urban Joseph Whitehead Peters * Birmingham, Ala.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; member of the Rotary Club; on the staff of St. Vincent's Hospital, where he died January 26, aged 74, of myocardial failure.

John Lyte Ressler, Bird In Hand, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; served as deputy coroner for many years; at one time medical director of the Lancaster County Hospital and Hospital for Insane, Lancaster; died January 21, aged 74, of diabetes mellitus.

George Anthony Retel, Buffalo; University of Buffalo School of Medicine, 1893; member of the Medical Society of the State of New York; at one time school physician; died in the Deaconess Hospital January 21, aged 75, of pneumonia.

Felix Rose, Green Bay, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; physician at the Odd Fellows Home; died January 15, aged 66, of acute appendicitis and complications.

Myra Daniel Allen Ruppel, Pasadena, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1887; for many years a member of the school committee in Lynn, Mass.; died in January, aged 81.

Purnell Fletcher Sappington, Perry Point, Md.; University of Maryland School of Medicine, Baltimore, 1887; member of the Medical and Chirurgical Faculty of Maryland; also a pharmacist; served during World War I; for many years chairman of the Bel Air town board; died in the Veterans Administration Facility January 23, aged 79, of coronary disease and arteriosclerosis.

Franklin Taylor Scanlon * Morgantown, W. Va.; University of Nashville (Tenn.) Medical Department, 1910; past president of the Monongalia County Medical Society and vice president of the West Virginia State Medical Association; captain in the medical corps of the U. S. Army during World War I; a director of the First National Bank and a member of the Kiwanis Club; on the staffs of the Heiskell Memorial Hospital and the Monongalia General Hospital, where he died February 25, aged 65, of mesenteric thrombosis.

Bert A. Smith, Auburn, Neb.; Chicago College of Medicine and Surgery, 1913; member of the Nebraska State Medical Association; on the staff of the Auburn Hospital; died January 11, aged 55, of coronary thrombosis.

Okey Warren Snodgrass, Frankford, Mo.; Barnes Medical College, St. Louis, 1910; died in St. Elizabeth's Hospital, Hannibal, January 28, aged 68, of heart disease.

Howard Somers, Morgan Hill, Calif.; Cooper Medical College, San Francisco, 1904; member of the California Medical Association; died in the Wheeler Hospital, Gilroy, January 20, aged 63, of heart disease.

John Wilson Stevenson, Hoquiam, Wash.; Drake University College of Medicine, Des Moines, 1907; member of the Washington State Medical Association; formerly county coroner and city health officer; died in Aberdeen January 20, aged 79, of cerebral hemorrhage.

Joseph Milton Trigg * St. Louis; College of Physicians and Surgeons, Keokuk, Iowa, 1893; at one time professor of clinical surgery and surgical pathology at the

St. Louis College of Physicians and Surgeons; on the surgical staff of the Missouri Baptist Hospital, where he died January 27, aged 73, of pneumonia.

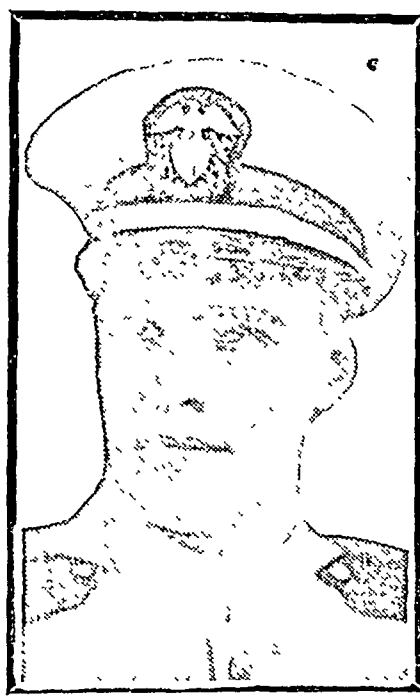
KILLED IN ACTION

Walter Spohn Caldwell * Kilgore, Texas; University of Texas School of Medicine, Galveston, 1931; formerly a member of the Kilgore Junior Chamber of Commerce and Lions Club; began extended active duty as a captain in the medical corps, Army of the United States, on Aug. 25, 1942; attached to an antiaircraft battalion; killed in action in the North African area, Nov. 20, 1943, aged 38.

Delbert Bevan Mallams, Ashland, Pa.; Temple University School of Medicine, Philadelphia, 1941; served internship at the Robert Packer Hospital, Sayre; commissioned a lieutenant (jg), medical corps, U. S. Naval Reserve, on July 14, 1942; began extended active duty Sept. 7, 1942 with the amphibious force, Paradise Creek Dispensary, Norfolk Navy Yard, Portsmouth, Va.; medical and surgical officer in charge of a flotilla of 18 LCI boats; participated in the invasions of Pantelleria, Sicily, Salerno, Nettuna and the battle of Anzio; recipient of five stars, European medal, Presidential Citation and the Purple Heart; promoted to lieutenant; drowned at sea while in naval action off the Anzio beachhead, January 26, aged 28.



CAPT. WALTER S. CALDWELL
M. C., A. U. S., 1905-1943



LIEUT. DELBERT B. MALLAMS
(MC), U.S.N.R., 1915-1944

Bureau of Investigation

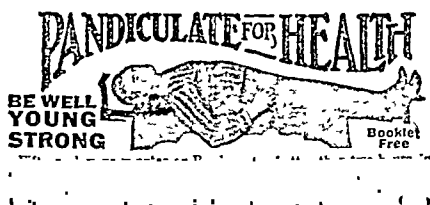
DAVID B. CROPP CROPS UP AGAIN

Post Office Department Detects Old Fraud Under New Name

For many years David B. Cropp of New York has been in and out of a fraudulent "height increasing" scheme perpetrated through the mails. It began apparently with "The Pandiculator," one of the earliest of the alleged spine-stretching devices. This one was advertised in pulp periodicals at least as far back as 1914.

Whether Cropp was its originator is not clear. In 1918 he sold the business to one Henry C. Crowell, a Cleveland attorney, according to the latter's testimony in 1941, when his concern, known as the Pandiculator Company, was debarred from the mails by the Post Office Department as a fraud. Some time after buying the thing from Cropp, Crowell, according to his testimony, sold it to a Harry L. Spaulding, from whom he bought it back in 1932 and operated it until 1941, when the aforementioned fraud order was issued against the names The Pandiculator Company and H. C. Crowell.

In April 1942 an additional fraud order was issued against H. C. Crowell alone, after the Post Office discovered that he had simply remained in the business and run it under his own name instead of that of the Pandiculator Company. Meantime, it appears, Cropp had reentered the business or started a competing one, operating under the trade style "International Health Device Corporation" and calling his product "The Therapeutic



A typical "Pandiculator" advertisement

Couch" or "The Cropp Therapeutic Couch." The description of it seems to correspond to that of the Pandiculator. Reportedly Cropp used testimonials from laymen, osteopaths, chiropractors and physiotherapists as to the efficacy of the couch in treating many serious disorders, besides increasing height and reducing weight and waistline measurements. This enterprise also came to grief when a Post Office fraud order was issued in October 1942 against the names David Cropp, David B. Cropp and the International Health Device Corporation.

But Cropp apparently decided not to let a mere government ukase interfere with his profits. He hit on a new trade style, "Physical Improvement, Inc.," but retained the old name for his mechanical fraud, "The Therapeutic Couch." Again the Post Office Department got on his trail and discovered that he was using as his chief advertising material a book, "The Human Body," which he had employed in promoting his earlier scheme. In this latest venture, according to evidence gathered by the government, Cropp's letters to prospective customers intimated that they were evidently practitioners of the healing arts, otherwise they would not be inquiring about his Couch, since he said he had for several months advertised it in professional journals. This, the Post Office declared, was a false representation, as shown by his simultaneous advertising in a cheap health periodical widely circulated among laymen as well as health-fad practitioners.

When Cropp was ordered by the Post Office Department to show cause why his Physical Improvement, Inc., should not be debarred from the mails on grounds of fraud, he presented as a witness in his behalf a naturopath licensed as such in Connecticut, Florida and the District of Columbia, and as a physiotherapist in New York state. After hearing all the evidence, the Post Office Department found that Physical Improvement, Inc., not only was a continuation of Cropp's previous fraud, and an attempt to evade the fraud order issued against Cropp and

the International Health Device Corporation, but was in itself a swindle. Accordingly, a new fraud order was issued on Aug. 7, 1943 against Cropp and his latest trade designation, Physical Improvement, Inc.

Note the finding of the Post Office Department that even before the fraud order against Cropp's International Health Device Corporation had been issued (although expected) Cropp had already incorporated his latest enterprise, Physical Improvement, Inc., thus showing his determination to continue the swindle, and that in this move he was assisted by a Jay H. Radley, M.D. The only person of this name in the American Medical Directory is listed under New York City. According to the data, he was born in 1863, was graduated from the old College of Physicians and Surgeons, Chicago, in 1889 and licensed to practice medicine in thirteen states. In 1929 one of the government departments at Washington, after looking into an advertised "obesity cure," reported that some of its promotional literature referred to Dr. J. H. Radley of New York as a recognized authority on skin diseases and featural defects. It has also been reported that J. H. Radley once authored an article in a chiropractic journal and that after his name were the letters "M.D., D.C.," the "D.C." presumably standing for "Doctor of Chiropractic."

The previous fraud orders issued against the various names under which this brazen scheme was perpetrated were dealt with at considerable length in this department of THE JOURNAL for April 4, 1942, page 1240; Dec. 12, 1942, page 1243, and Feb. 19, 1943, page 537. Apparently this swindle is hard to scotch. There seems to be something appealing in the idea that one may grow tall and strong and beautiful just by lying down on a special kind of couch! When will Cropp crop up again?

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products:

Chu Suey Gee Chinese Medicines.—These are put out under the name of the Suey Chee Herb Company, San Francisco, which is a trade name for one Chu Suey Gee. In May 1943 he stipulated with the Federal Trade Commission that he would cease representing that his pills strengthen the heart or that their use is indicated for that purpose.

Needee Acidophilus Culture and Needee Lactone.—In May 1943 the Federal Trade Commission accepted a stipulation from John T. Heinrichson, trading as Heinrichson's Natural Food Company, Chicago. In this he agreed to discontinue any advertising which represented that either of his preparations is a cure or remedy or effective in the treatment of diarrhea, intestinal flatulence, rheumatism, arthritis, metabolic disorders, hyperacidity, colitis or arteriosclerosis, that either will drive out putrefactive bacterial or toxic poisons, that through the use of these youth, beauty or lasting health can be obtained, or that any Needee food product is guaranteed by or insured against imperfections by Lloyd's of London or any other insurer or guarantor.

Security Suppositories and Stillman's Suppositories.—In April 1943 the Chicago Mail Order Company, Chicago, entered into a stipulation with the Federal Trade Commission, to the effect that it would cease representing, by use of the designation "security" or by any other means, that its suppositories give security or complete protection against conception or are nonirritating to normal vaginal tissue.

Si-Oze.—This is put out by one Berdve H. Sigel, trading as the Si-Oze Company, Chicago. In May 1943 this person stipulated with the Federal Trade Commission to discontinue any advertising which failed to reveal that excessive use of this product may be dangerous or that it should not be administered to infants and younger children except on competent advice, or used by persons suffering from high blood pressure, heart disease, diabetes or thyroid trouble, and further, that frequent or continued use of this preparation may cause nervousness, restlessness or sleeplessness. The stipulation provided, however, that such advertising need contain only the statement, "Caution—Use only as directed" when the labeling contains a warning to the same effect.

Correspondence

FAILURE OF THE SWEAT MECHANISM IN THE DESERT

To the Editor:—I should like to comment briefly on the report in THE JOURNAL February 19 concerning the subject of "Failure of the Sweat Mechanism in the Desert" and "Thermogenic Anhidrosis."

In view of the great importance of this subject as regards both the armed forces and industry, reliable data concerning these functions is greatly needed. There is no doubt that prolonged exposure to heat, particularly when considerable physical activity is required, leads in the course of time, to serious salt depletion (NaCl) associated with symptoms, of serious muscular weakness, muscular and abdominal cramps, drowsiness, loss of appetite and such central disturbances as increased irritability, nausea, vomiting, vertigo, fever, visual disturbances and delirium, in some instances culminating in tetany and collapse.

Anhidrosis has been found to be most frequently associated with chloride deprivation and dehydration. Since the work of Bunge and others has shown that the largest part of the approximately 100 Gm. of sodium chloride contained in the average human body is to be found in the tissues (approximately 60 per cent or more), it is reasonable to assume that a considerable amount of chlorides can be lost without a corresponding lowering of the blood chloride level, which the organism attempts to maintain tenaciously.

The authors of the report apparently assume that the maintenance of the blood chloride level within normal limits in a majority of the cases which they have observed was sufficient evidence to justify the assumption that a sodium chloride deficiency did not exist (see comments by Peters, pages 299 and 300 of Duncan's "Diseases of Metabolism"). However, it is interesting to observe that in case 6, as reported, a satisfactory minimum replacement of the chloride loss (2,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride) had been given on admission, and that this was followed by a prompt remission of the clinical symptoms, with a return to normal sweat function within twenty-four hours. Further they point out that all of their patients were given some form of salt therapy, 4 to 6 Gm. daily as oral tablets, in addition to using drinking water containing 0.1 per cent solution of sodium chloride. This addition to their daily intake they noted failed to relieve the symptoms. Most authors agree that such patients should receive a minimum of 25 Gm. of sodium chloride added to their intake within the first twenty-four hours, preferably as isotonic solution intravenously in addition to the oral intake. Under desert conditions this would seem indeed a minimum requirement in order to facilitate recovery from severe chloride depletion.

The authors note further that following recovery of the sweating function the symptoms could not be provoked when the patient was temporarily subjected to excessive heat of the desert sun.

Here we must raise the question as to whether their salt depletion and dehydration had been partially or completely dissipated before they could stand such a test satisfactorily, especially in view of the return of the sweat function.

The authors' conclusion that salt is not indicated and of no therapeutic value is a dangerous assumption in view of the existing physiologic evidence to the contrary. Do their observations rest on sufficient experimental evidence to support such a conclusion?

MICHAEL M. MILLER, Ellis Island 4, N. Y.
Assistant Surgeon (R), U. S. Marine Hospital.

To the Editor:—In the article on "Failure of the Sweat Mechanism in the Desert" (THE JOURNAL February 19) by Wolkin, Goodman and Kelley a new syndrome is presented and an attempt is made to "demonstrate that the presence or absence of normal sweating function is the determining factor in the production of the syndrome."

In the article no mention is made of the cortical influence on general body sweating. It is a physiologic fact that during mental stress on a very hot day there is a suppression of general body sweating. (Kuno, Yas: The Physiology of Human Perspiration). The anxiety state, which is a stimulus for palmar sweating, may during extreme elevations of temperature inhibit both palmar and general body sweating. This paradoxical inhibition of sweating also occurs in severe heat strokes. It seems unreasonable to believe that this inhibition seen in heat stroke is caused by paralysis of the sweat glands, for there is a prompt restoration of sweating when the patient is placed in cool surroundings. The limitation of sweating to the face and neck is difficult to explain. The possibility of local reflex action to these exposed parts cannot be excluded.

A review of the symptoms in the 8 cases presented by the authors suggests a psychogenic factor: "shaky and weak" (case 1), "head whirling" (case 2), "all in feeling" (case 3), "light headed and extremely weak" (case 4), "light headed" (case 5), "dizzy while on the firing range" (case 6), "lost consciousness for a few seconds" (case 7), "burning up" (case 8).

It is noteworthy that all the patients improved when placed in a different environment. Obviously, if psychic influences were the basis for this improvement, it is understandable why there was no disturbance in the blood chlorides.

In summary it is felt that the syndrome described by the authors is fundamentally a psychosomatic phenomenon. The inhibition of sweating is secondary. Further investigations from a psychosomatic point of view are indicated.

JACOB J. SILVERMAN,
Captain, M. C., A. U. S.
VERNON E. POWELL,
Lieutenant Colonel, M. C., A. U. S.

ANHIDROSIS FOLLOWING EXPOSURE TO EXTREME HEAT

To the Editor:—In THE JOURNAL, February 19, Wolkin, Goodman and Kelley reported the interesting syndrome of anhidrosis following exposure to extreme heat. One case of this syndrome was studied in Louisiana during the summer of 1943. This man presented the identical picture which they describe: of uneventful previous exposure to heat with a sudden onset of weakness and malaise but no true heat or sun stroke following a particularly difficult march on a hot, humid day. On examination he showed dry skin of the extremities and trunk with pronounced sweating of only the face and neck, which they found characteristic. In the cool of the hospital he was quite comfortable unless he drank hot liquids, at which time flushing of the face associated with profuse sweating of the face and neck was reproduced. The same effect in the areas was produced by the injection of physostigmine. The findings were corroborated with Minor's starch-iodine technic.

The local skin changes are of great interest to the dermatologist and perhaps should be more strongly emphasized. In addition to the scaling, fine papular lesions which the authors describe, our patient later developed over the extensor surfaces of his arms and legs and on his trunk another distinct derma-

toxis. It consisted of superficial, more or less circinate areas of slight erythema with moderate white scaling and mild pruritus. The scaling was patchy and similar to ichthyosis but could be differentiated from congenital ichthyosis without difficulty. Two other diseases which may have a similar appearance are pityriasis rosea and tinea circinata. The coloring, distribution and course help differentiate it from the former, while the very superficial character and lack of fungi in the scales prove it different from the latter.

About 20 additional patients were seen in consultation for a skin disease which was identical in distribution, appearance, symptoms and course with that described. None of these patients, as far as could be determined, had had an episode of "thermal anhidrosis." All of them had spent the summer in Louisiana, however, and had been exposed to high temperatures. A diagnosis of asteatosis was made in each case, and it was felt that it might be a late sequela of severe prickly heat (miliaria rubra) and was somehow caused by the excessively hot climate.

The patient with anhidrosis, as well as the others, obtained satisfactory relief by using plain greasy ointments and avoiding excessive bathing. Numerous colored photographs of this type of asteatosis, as well as of the starch-iodine demonstration of anhidrosis, were made. It was possible thereby to demonstrate the unique nature of these two conditions to other medical officers.

I should like to congratulate the authors of the article on "thermal anhidrosis" for defining what is apparently a new syndrome. Added to it, however, should be "thermal asteatosis," which may or may not be associated with the anhidrosis and which is commonly the patient's only complaint. Further, physiologic and microscopic study of these diseases will undoubtedly give additional valuable information of the complicated mechanisms of adjustment of the human organism to hot climates.

HARVEY BLANK, Captain, M. C.,
69th General Hospital,
A.P.O. 9875, % Postmaster,
New York, N. Y.

MODES OF SPREAD OF POLIOMYELITIS

To the Editor:—Since the appearance in THE JOURNAL (Dec. 4, 1943) of an editorial on "The Modes of Spread of Poliomyelitis Virus" some discussion has arisen on several points (Ward, Melnick and Paul, correspondence, February 26). The editorial represented a comment on a paper of Maxcy and Howe, "The Significance of the Finding of Infantile Paralysis Virus in Sewage," which appeared in the *Sewage Works Journal* for November, 1943.

Drs. Ward, Melnick and Paul are chiefly concerned with the editorial but also take exception to a quotation from the summary of Maxcy and Howe's paper, namely that "the disease would not attack children preponderantly, as is the case were it transmitted by the fly or any other insect." While this statement is obviously erroneous as it stands without context in the summary, in the body of the paper the authors quoted from W. H. Frost to the effect that insect transmission of poliomyelitis or any other disease could not give such a preponderance of cases among children in a nonimmune population. This point is a fine one and not well taken, since it is extremely doubtful whether there has ever been any record of a virgin soil epidemic. Nevertheless, as stated in the paper, the role of the fly in the transmission of poliomyelitis is still undetermined.

KENNETH F. MAXCY, M.D.
HOWARD A. HOWE, M.D., Baltimore.

INTERCOSTAL NERVE BLOCK

To the Editor:—In THE JOURNAL, February 19, Dr. E. I. Evans described the method of intercostal anesthesia in the shocked patient and credited it to Bartlett (1940). This method has been described and illustrated in my short monograph on Local Anesthesia (Philadelphia and London, W. B. Saunders Company, 1928, p. 117). It was used during the first world war by a number of military surgeons, notably Franz. The block is especially useful in lateral, subcostal or paramedian incisions, where only one side needs to be injected and where the nerve supply from the other side can be excluded by a subcutaneous infiltration in the midline. It is a simple procedure which, combined with morphine-scopolamine, allows a rapid exploration of the traumatized abdomen. The case reports of Dr. Evans certainly testify for the usefulness of this method under battle conditions. If pentothal sodium could be eliminated it might add to the safety of the procedure, since experienced anesthetists may not always be on hand.

The closure of the abdomen can be facilitated by infiltration of the abdominal muscles and mainly the parietal peritoneum through the abdominal wound.

GEZA DE TAKATS, M.D.,
St. Luke's and Research and
Educational Hospitals,
Chicago.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, April 8, page 1081.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, September 5. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARKANSAS: * *Eclectic*. Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: San Francisco, June 27-29. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

DELAWARE: Dover, Oct. 10-12. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

IDAHO: Boise, July 11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KENTUCKY: Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville.

MARYLAND: *Medical*. Baltimore, June 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homoeopathic*. Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: * Minneapolis, April 18-20. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEVADA: Carson City, May 1. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, September. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 41½ S. Third St., Grand Forks.

OHIO: *Endorsement*, Columbus, July 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * *Endorsement*, Portland, April 22. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandena St., Columbia.

VERMONT: Burlington, Sept. 12-14. Sec., Dr. F. J. Lawliss, Richford.

WEST VIRGINIA: Charleston, May 1-3. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston.

WISCONSIN: * Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: Cheyenne, June 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

MICHIGAN: Ann Arbor and Detroit, May 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

NEBRASKA: Omaha, May 2-3. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

RHODE ISLAND: Providence, May 17. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Nashville and Memphis, June 23-24. Sec., Dr. O. W. Hyman, Memphis.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure to Diagnose Osteomyelitis.—The plaintiff was bitten by a coyote, Nov. 30, 1937, receiving a deep puncture wound and abrasions on the back of the hand. The defendant physician was consulted December 2 and placed a "wick," composed of gauze, in the puncture wound to aid drainage and cleaned, dressed and bandaged the hand. This treatment was continued for several days, but the hand became more swollen and painful. By December 10 the plaintiff's condition had become bad, his temperature had risen considerably and he suffered such pain below his left knee that he was unable to leave his home and the physician was obliged to call on him there. The physician diagnosed the pain in the knee and leg as rheumatism and prescribed the internal and external use of wintergreen. The pain did not abate, and the physician next prescribed a hot pad to be placed on the knee and leg. The patient continued to have chills and fever, his temperature remained extremely high, his pain became more excruciating, and his hand, leg and knee became more swollen. The physician then prescribed milk poultices for the hand but the patient steadily grew worse, he could not sleep or rest and finally he became delirious. The physician, however, vetoed any suggestion of hospitalization. Finally, on December 19, neighbors, without the physician's knowledge, took the patient to a hospital in a town about 30 miles from the patient's home in Castle Dale, Utah. At the hospital, Dr. Hubbard took charge of the case and after a general exploratory operation ascertained that the patient had a general septicemia and acute osteomyelitis of the left tibia. Recovery was poor. Four months later the patient was removed to a veterans' hospital in Salt Lake City, where he remained for over a year. By this time he had developed chronic osteomyelitis. About a year later he was admitted to the Marine Hospital in San Francisco, where his leg was amputated at the junction of the middle and lower thirds of the femur. Subsequently the patient

brought suit contending that the physician had been negligent by failing (1) to diagnose the patient's condition correctly as general septicemia and acute osteomyelitis in the left tibia; (2) timely to hospitalize the patient and to operate, and (3) to give blood transfusions, all of which contributed to the patient's loss of his leg, so it was alleged. From a judgment in favor of the patient the physician appealed to the Supreme Court of Utah.

In malpractice cases, said the Supreme Court, to determine whether or not a physician has been negligent in the treatment of a patient, it is necessary to determine whether or not he has used or failed to use the ordinary care and skill required of physicians in the community which he serves. What is the ordinary care and skill required of a physician in the community in which he serves must necessarily depend on expert testimony. There was expert testimony in this case that a physician who used the ordinary skill, care and knowledge required of him in Castle Dale, Utah, in 1937 would have known from the symptoms of the patient and his case history that the patient was suffering from a general blood stream infection and that osteomyelitis should have been suspected. The proper treatment for septicemia at that time and place was to put the patient to bed and see that he had plenty of rest, liquids and a good diet; that the patient be made as comfortable as possible because it is while the patient is sleeping or resting that the body is best able to combat a bacterial infection in the blood stream. The defendant did not instruct the patient to remain in bed and rest, neither did he prescribe plenty of fluids and a proper diet. When the patient complained of pain in his knee and leg defendant diagnosed it as rheumatism and prescribed treatment for that ailment. This, in the opinion of the court, constituted negligence. In arriving at this conclusion the court relied on *Baird v. National Health Foundation*, 235 Mo. App. 594, 144 S. W. (2d) 850, where it was held that it was negligence for physicians to fail to apprise themselves of symptoms which are present and to diagnose and correctly treat the patient on the basis of those symptoms. Regardless of what skill is used, that court held, if a physician fails in his duty to observe and discover a patient's illness, he is negligent. In this case, continued the court, there was sufficient evidence for the jury to find that the physician was negligent in having failed properly to observe the patient's condition and in failing correctly to treat him for a staphylococcal infection by failing both before and after December 10 to prescribe that he remain in bed and rest, take plenty of fluids and eat proper food.

The next question to be determined, said the court, is whether or not the physician was negligent in failing to hospitalize timely and to operate on the patient. At the trial there was evidence that immediately after the patient was taken to the hospital roentgenograms were taken of his leg and knee, that these roentgenograms did not disclose any abnormality and that therefore an exploratory operation was performed, revealing the presence of osteomyelitis in the upper tibia, about 4 or 5 inches being involved. Medical expert witnesses testified that the disease at that time was not in an advanced stage because the roentgenograms did not show any bone involvement. Osteomyelitis, the court observed, is a pus-forming disease which causes decalcification, and the length of time it takes to destroy the bone depends on the virulence of the attacking bacteria. From the fact that only 4 or 5 inches of the tibia had been involved at the time of the operation, the medical expert witnesses were of the opinion that the infection had been localized at that point only a few days. These physicians further believed that earlier hospitalization and operation would not have been beneficial because there is a tendency for the disease when it has localized to wall itself off and it is better to allow that process to continue so that when the operation is performed there will be less likelihood of spreading the infection. From this, said the court, it will be noted that there was insufficient evidence to be submitted to the jury on the question of whether or not the physician was negligent in having failed to hospitalize and operate on the patient sooner.

The patient contended that the physician was negligent in failing to give blood transfusions, since blood transfusions are necessary to combat osteomyelitis. Osteomyelitis, said the court, is a blood stream infection carried within the bone. One medical expert witness testified that when a patient has a badly infected hand due to a coyote bite, suffers from chills and fever, has a general blood stream infection, is very ill, suffers constant pain in his leg below the knee and when that is touched suffers greater pain, he should be prepared for an operation to determine whether he has acute osteomyelitis by being given proper rest, administration of fluids and blood transfusions. Whether blood transfusions are necessary depends on a laboratory test of the blood. Usually in cases of acute osteomyelitis there is a likelihood of a rapid blood destruction; that blood transfusions are necessary to alleviate this condition, and it is dangerous to delay giving blood transfusions because the real danger in acute osteomyelitis is sepsis in the system. Another expert was of the opinion that, unless a blood test showed a destruction of the blood, blood transfusions were not beneficial. The defendant physician had taken no blood test of the patient, and therefore there was no evidence in the record of the actual condition of his blood. However, observed the court, the defendant physician should not be allowed to take advantage of his own failure to act, and we believe there was enough evidence to go to the jury on the question of the negligence of the defendant for failure to prescribe blood transfusions.

The most important question, said the court, however, remains to be settled; namely, was the negligence of the defendant physician the proximate cause of the ultimate injury suffered by the plaintiff? Unless there is evidence showing the causal relation between the negligence of the physician and the ultimate injury there is no liability on the part of the physician. Medicine is not an exact science and it is not necessary that the proximate cause of an injury sustained through the negligence of a physician be proven with exactitude. It is enough if there is substantial evidence to support the judgment. If the injury sustained could be attributed to two or more causes, one of which was the negligence of the physician, it would be a question for the jury to determine which was the proximate cause of the injury. Had the patient pleaded that the physician had negligently failed properly to treat his injuries, commencing from December 2, when he was first employed, instead of only from December 10, by failing to prescribe that he remain in bed, get plenty of rest, take plenty of fluids and eat proper food, which failure resulted in a blood stream infection which in turn caused the osteomyelitis, we are not prepared to say that there was insufficient evidence to go to the jury on the question of proximate cause. Plaintiff, however, based his case on the failure of the physician to recognize that osteomyelitis had set in by December 10 and to treat him for it properly by administering blood transfusions and operating in time. There was no expert evidence in this case that if the physician had done these things at that time the condition which caused the eventual amputation of the patient's leg could have been avoided. No expert witness testified that had the physician recognized the symptoms of osteomyelitis he could have alleviated or cured it by using the ordinary skill, care and knowledge of a physician practicing in that vicinity. As to blood transfusions, one medical witness did testify that it was beneficial in blood stream infections but did not testify that had there been transfusions the end result might have been avoided. Osteomyelitis being a disease the cause and cure of which is peculiarly within the knowledge of medical men and not a matter of common knowledge, it is necessary to have expert testimony concerning the effect of the negligence of a physician on the end result. In this case there was no evidence that anything the physician did or failed to do after osteomyelitis developed caused the end result. In the absence of such expert testimony there is nothing on which a jury can base its finding on the proximate cause of the injury. A jury may not conjecture or speculate but must have substantial evidence on which to base a verdict. The judgment in favor of the patient was accordingly reversed and a new trial was ordered—*Anderson v. Nixon*, 150 P. (2d) 216 (Utah, 1943).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, April 18 20 Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for the Surgery of Trauma, Chicago, June 9 10 Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.
- American Association for Thoracic Surgery, Chicago, May 5 6 Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Genito Urinary Surgeons, Stockbridge, Mass., June 8 10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8 11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of Plastic Surgeons, Philadelphia, May 25 27. Dr. Frederick A. Figt, 102 Second Ave., S.W., Rochester, Minn., Secretary.
- American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American Broncho Esophagological Association, New York, June 6 Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago, Secretary.
- American Laryngological Association, New York, June 7 8 Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.
- American Laryngological, Rhinological and Otolological Society, New York, June 9 10 Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.
- American Neurological Association, New York, May 19 20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.
- American Ophthalmological Society, Hot Springs, Va., May 29 31. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.
- American Psychiatric Association, Philadelphia, May 15 18 Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
- American Psychoanalytic Association, Philadelphia, May 13 15 Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
- American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St., N.W., Washington, 8, D. C., Secretary.
- Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 9 Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- California Medical Association, Los Angeles, May 7 8 Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Connecticut State Medical Society, Bridgeport, May 2 4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Georgia, Medical Association of, Savannah, May 9 12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Chicago, May 16 18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, April 20 21. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
- Kansas Medical Society, Topeka, May 10 11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society, New Orleans, April 24 26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25 26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 23 24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.
- Mississippi State Medical Association, Jackson, May 9 10 Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, April 23 25 Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis, Secretary.
- National Tuberculosis Association, Chicago, May 10 12 Dr. Charles J. Hatfield 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1 4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 16 Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25 27 Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, Pinchurst, May 1-3 Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Fargo, May 7 9. Dr. L. W. Larson 221 5th Street, Bismarck, Secretary.
- Ohio State Medical Association, Columbus, May 2 4 Dr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24 26 Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Rhode Island Medical Society, Providence, May 24 25 Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.
- Society of American Bacteriologists, New York, May 3 5 Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- South Dakota State Medical Association, Huron, May 21 23 Dr. Roland G. Mayer, 22 1/2 S. Main St., Aberdeen, Secretary.
- Texas, State Medical Association of, Dallas, May 10 11 Dr. Norman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
- West Virginia Medical Association, Wheeling, May 15 16 Dr. Charles L. Lively, P. O. Box 1031, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago 67:1-88 (Jan.) 1944

*Prophylaxis of Measles with Convalescent Serum: Principal Factors Influencing Results. M. Stillerman, H. H. Marks and W. Thalhimier.—p. 1.

*Attack Rate and Incubation Period of Measles: Significance of Age and of Conditions of Exposure. M. Stillerman and W. Thalhimier.—p. 15.

Immunity to Tetanus Induced by Third Dose of Toxoid Three Years After Basic Immunization: Based on Study of 38 Allergic Children. M. M. Peshkin.—p. 22.

Subclinical Vitamin Deficiency: VI. Thiamine in Skeletal Muscle of Infants and Children. Mildred Carleen Hulke, N. Weissman, Virginia Rowland, R. Gross and J. W. Ferrebee.—p. 30.

Hypervitaminosis A and Carotenemia. H. W. Josephs.—p. 33.

Tularemia Meningitis: Report of Case and Summary of Previously Reported Cases. J. K. David Jr. and J. N. Owens Jr.—p. 44.

Use of Evaporated Milk without Added Sugar for Feeding of Infants. H. McCulloch.—p. 52.

Convalescent Serum in Prophylaxis of Measles.—Stillerman and his associates investigated the measles-protective properties of convalescent serum and the factors that influence the results of its use, such as age of contact, dosage of serum, interval between exposure and injection, and duration and intimacy of exposure. Since a certain proportion of susceptible persons normally escape infection, allowance has been made for this on the basis of a control study of contacts who have not received injections. From 1938 to 1941 a group of 502 intimately exposed susceptible family contacts from 6 months to 15 years of age were given injections of convalescent measles serum. A group of 245 subjects of similar ages who had not received convalescent serum served as controls. In the control group the rate of immunity varied with age. Of children 6 months to 11 months of age one third did not have measles on first exposure; of those between 1 and 7 years 10 to 14 per cent escaped the disease; of those from 8 to 9 years of age 31 per cent were immune, and of the small group between 10 and 15 years of age 85 per cent were immune. Complete protection was obtained by 50 per cent of the 502 children. Modified measles occurred in 49 per cent and unmodified measles in 1 per cent. The rate of complete protection, analyzed according to the interval between the exposure and the injection, showed no significant difference between the fourth and the seventh day. However, on the eighth day after exposure, even though the serum had a definite modifying effect, it did not prevent measles. Mild complications developed in only 5, or 1 per cent, of the 502 contacts who received injections of serum. Complete protection is recommended for all exposed healthy susceptible children under 2 years of age, because it postpones the attack until they are older, when there is a reduced case fatality rate, and is advised also for contacts over this age who are acutely or chronically ill. Modified measles is indicated for healthy children over 2 years of age, because this condition is a mild disease rarely associated with complications and is followed by strong and lasting immunity. For complete protection the optimum dose after an exposure of four to seven days is 10 cc. for contacts 6 to 11 months of age, 15 cc. for those 12 to 23 months and 20 cc. for those 2 and 3 years of age. For healthy contacts 4 years and over, complete protection is not worth striving for. If modified measles is desired, 5 cc. is sufficient between the fourth and the eighth day after exposure for contacts up to 24 months of age, and 10 cc. for those older.

Attack Rate and Incubation Period of Measles.—Stillerman and Thalhimier studied certain aspects of the attack rate of measles in 266 intimately exposed susceptible family contacts 1 month to 14 years of age. Their observations were made in

the 1940-1941 epidemic in New York City. They found that the secondary attack rate was 75 per cent. Age was the principal factor influencing the secondary attack rate of intimately exposed children. This attack rate was lowest for children in early infancy, highest for those 1 to 7 years of age (80 to 90 per cent) and sharply lower for those in the 10 to 14 year group (15 per cent). Of 21 children 6 months to 10 years of age who escaped measles on one exposure and were reexposed, about one half contracted the disease. Hospitalization of patients after the appearance of the rash did not lower the secondary attack rate of the intimately exposed susceptible children. An increased intensity of exposure as measured by simultaneous contact of susceptible children with more than 1 patient with measles in nine families did not increase the incidence of the disease. The incubation period of measles was ten to fourteen days for 80 per cent of the contacts, fifteen to nineteen days for 14 per cent and less than ten days for 6 per cent. The proportion of patients with an incubation period of fifteen days or more was significantly greater in the 12 to 23 month age group.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis 28:1-132 (Jan.) 1944

*Long-Term Results in Treatment of Latent Syphilis. T. H. Discker, E. G. Clark and J. E. Moore.—p. 1.

Studies in Syphilis: IV. Relation Between Blood Serologic Tests and Anatomic Lesions at Autopsy. B. Black-Schaffer and P. D. Rosahn.—p. 27.

*Value of Dark Field Examination of Lymph Nodes in Diagnosis of Early Syphilis. A. B. Loveman and R. P. Morrow Jr.—p. 44.

Dark Field Examination of Material from Lymph Node Punctures: Report of 2 Cases with no Evident Primary Lesions. O. F. Agee.—p. 57.

Experimental Prophylaxis of Chancroid. F. C. Combes and O. Canizares.—p. 59.

Local Application of Sulfonamide Ointments in Treatment of Acute Gonococcal Urethritis in Male. O. F. Cox.—p. 66.

Dihydroxypropyl Bismuthate Orally in Treatment of Syphilis: Clinical and Chemical Study (Preliminary Report). R. Nomland, L. M. Wheeler, R. G. Carney, F. A. Kuever and E. G. Gross.—p. 68.

Intraurethral Chancres. A. B. Loveman and R. P. Morrow Jr.—p. 79.

Decrease of Prothrombin Concentration in Massive Arsenotherapy: Preliminary Report. F. Kalz and L. C. Steeves.—p. 89.

Technic of Cisternal Puncture in Modern Treatment of Syphilis. L. Spiegel.—p. 96.

Trial Experiments on Use of Para-Aminobenzoic Acid to Inhibit Toxic Reactions in Treatment of Neurosyphilis with Pentavalent and Trivalent Arsenicals: Report of Failure to Prevent Secondary Reactions. A. S. Rose, L. D. Trevett, H. C. Solomon and J. H. Sandground.—p. 103.

Treatment of Latent Syphilis.—Discker and his associates define latent syphilis as that stage of infection in which the patient, having no symptoms or physical signs of syphilitic disease, is recognizable as syphilitic only by means of a positive laboratory test of the blood. The only justification for submitting him to the risks of antisiphilitic treatment is for the protection of public health (of importance only if his infection is recent) and for the purpose of preserving his health and of preventing the development of late manifestations of syphilis. In the material reviewed the diagnosis of latent syphilis rested on (a) repeated positive blood serologic tests (the vast majority of cases), (b) in seronegative patients a reliable history or (c) in seronegative women the birth of a syphilitic child. Excluded are all patients with originally abnormal spinal fluids because of the wide difference in prognosis of latent syphilis and asymptomatic neurosyphilis. Among 5,326 patients with latent syphilis admitted to the medical clinic of the Johns Hopkins Hospital between 1914 and 1934 there were 926 who were observed for more than five years. These are a fairly representative sample of the total group. The final status was evaluated by physical examinations and in many patients by repeated cerebrospinal fluid examinations and radiologic study of the cardiovascular stripe. Progressions were higher among men than among women, but the differences were within sampling variation. Cardiovascular progression was more frequent among Negro men and neurosyphilis more frequent among white men. Progression was no more frequent among seroresistant patients than among those whose blood serologic test reversed in the first year of observation. Parous women progressed less frequently than did nulliparous women or men, but usually they received more treatment. Neuroprogression was approximately the same in all age groups. Benign late syphilis appeared predominantly in the age group under 30, cardiovascular syphilis after this age. The

highest proportion of progression occurred among patients receiving under fifteen arsenical injections and a corresponding number of heavy metal injections. Progressions were no more frequent among patients receiving fifteen to nineteen injections than among those receiving more treatment. The optimum amount of treatment to reduce progression to a minimum is approximately twenty injections each of an arsenical and a heavy metal.

Dark Field Examination of Lymph Nodes in Syphilis.—Loveman and Morrow studied the value of the examination of lymph nodes for *Treponema pallidum* by dark field. They decided to determine (1) the accuracy of this method, (2) the percentage of additional positive dark fields they could obtain with it, (3) whether or not the method could be employed in an army hospital and (4) whether, if nonpathogenic spirochetes were encountered, they were a source of confusion with *Treponema pallidum*. The authors made studies on 40 patients, 25 of whom had syphilitic lymphadenopathies and 15 had various types of nonsyphilitic lymphadenopathies. The technic of aspirating the contents of lymph nodes is as follows: The skin overlying the node to be aspirated is painted with any suitable antiseptic, such as tincture of iodine, metaphen or merthiolate. With use of a 20 to 22 gage needle, about 0.5 cc. of sterile distilled water is drawn up into a 5 to 10 cc. Luer syringe. The suitable node is then fixed with the fingers of one hand so as to prevent it moving away from the needle when the puncture is attempted. The needle is then inserted directly into the node. When it is certain that the node substance has been pierced, the water is injected. The needle is then rotated for thirty or forty seconds and the node is gently moved from side to side; then withdrawal of a slightly blood tinged serum is possible. A small drop is placed on a glass slide and the search is made for spirochetes. The technic is simple and easily mastered. The authors found that in every patient in whom the dark field of the local lesion was positive for *T. pallidum* and the nodes were sufficiently enlarged to permit aspiration the dark field examination verified the local findings. By employing aspiration dark field of lymph nodes the authors were able to increase the percentage of immediate diagnosis from 28 to 76. In neither syphilitic nor nonsyphilitic lymph nodes were spirochetes other than *T. pallidum* encountered.

Annals of Surgery, Philadelphia

119:1-160 (Jan.) 1944

Experiences with Chest Wounds from Pacific Combat Area. E. Holman.—p. 1.

*Afferent Vasodepressor Nerve Impulses as Cause of Shock: Tested Experimentally by Aortic-Depressor Nerve Stimulation. D. B. Phemister, C. H. Laester, Lillian Eichelberger and R. J. Schachter.—p. 26.

*Studies on Traumatic Shock: I. Blood Volume Changes in Traumatic Shock. E. I. Evans, M. J. Hoover, G. W. James III, and T. Alm.—p. 64.

*Liposarcoma—Malignant Tumor of Lipoblasts. A. P. Stout.—p. 86.

*Lymphosarcoma of Gastrointestinal Tract: Report of 20 Cases. B. McSwain and J. M. Beal.—p. 108.

Hypertrophic Pyloric Stenosis in Adults: Report of 2 Cases. J. E. Berk and H. J. Dunlap.—p. 124.

Experiences in War Surgery in China. P. E. Adolph.—p. 134.

Depressor Nerve Impulses in Shock.—Phemister and his collaborators found that stimulation of the aortic-depressor nerve of the rabbit may maintain the blood pressure at shock levels for hours without serious impairment of the circulation or of the body tissues. However, if continued for a longer period it may produce death from the effects of hemodilution, anoxia and damage to the vasomotor centers, a condition which may be designated as neurogenic shock. Plasma proteins are lost from the blood apparently as a result of capillary damage. Judging by the relative harmlessness of these long periods of low blood pressure in rabbits, by the inability to produce more than a brief slight lowering of blood pressure by direct stimulation of somatic nerves which carry impulses from traumatized fields and by the comparatively short duration of the periods of reflex lowering of blood pressure during syncope and abdominal manipulations, it is extremely improbable that "primary shock" is ever produced in man by the action of afferent depressor nerve impulses. The use of the term "primary shock" to denote such a condition should be abandoned. When the blood pressure of the rabbit was first lowered to shock levels by hemorrhage and

the aortic-depressor nerve then stimulated, the additional lowering of blood pressure would tend to hasten death to some extent. Also when the blood pressure was first maintained at shock levels for periods of one to four hours by aortic-depressor nerve stimulation and the rabbits then bled, there was usually some reduction in ability to tolerate loss of blood. Judging from the results of combining hemorrhage and aortic-depressor nerve stimulation in lowering blood pressure and producing shock in rabbits, the occurrence in man of fainting or of a reflex fall of blood pressure from abdominal manipulation in the presence of low blood pressure produced by hemorrhage may constitute a contributing factor to shock. Clinical experience also supports this contention to some extent.

Blood Volume Changes in Traumatic Shock.—Evans and his collaborators estimated the plasma volume in patients who were in shock as a result of various types of trauma. They also attempted to correlate these blood volume studies with the manifestation of signs of shock in these patients. It was their aim to determine the relative importance of blood loss as an initiating and sustaining factor in traumatic shock. They had clinical shock material similar to that seen in modern warfare. One of their hospitals cares for a large urban Negro population, among which knife and gunshot wounds of the extremities, chest and abdomen are frequent. The authors also studied a considerable number of traumatic injuries of the skeletal structures caused by automobile and industrial accidents. With use of the Gregersen-Gibson method for the estimation of plasma volume, it has been found that signs of severe shock do not ordinarily appear unless the blood loss is greater than 15 per cent. The average blood loss in severe traumatic shock has been about 38 per cent, no matter what the nature of the trauma. Analysis of dye disappearance curves revealed no evidence of increased generalized capillary permeability in traumatic shock. From hematocrit studies it is evident that what is lost early in traumatic shock in the zone of injury is whole blood, not plasma. Severe depletion of blood volume appears to be the most important single factor in the causation of traumatic shock. A decline in blood pressure levels is the most valuable clinical sign in the early diagnosis of clinical shock.

Liposarcoma: Malignant Tumor of Lipoblasts.—Stout records the group of 41 cases of liposarcoma which have accumulated in the Laboratory of Surgical Pathology of Columbia University during the past thirty-seven years and integrates the information gained from them with what can be gleaned from 134 previously reported cases. These tumors tend to form large bulky masses, with a predilection for the thigh and extra-peritoneal tissues but with occasional appearance in many other regions. They exhibit great variations in speed of growth, they are sometimes multiple and the more malignant forms metastasize usually either to the lungs or to the liver. These tumors are frequently mottled with yellow because of their lipoid content and are often slimy from the formation of mucoid material. Microscopically they can be divided into one well differentiated, less malignant group which simulates the appearance of ordinary embryonal fat and three other poorly differentiated more malignant groups resembling respectively atypical ordinary embryonal fat, atypical brown fat with the formation of rounded lipoblasts, and finally a group showing these two elements in combination. Probably as a result of metaplasia these tumors can on occasion form other tissues such as reticulin and bone. This versatility suggests that there are probably not separate embryonal stem cells for adipose tissue and brown fat but that the two spring from a common ancestor segregated from the primitive mesenchyme.

Lymphosarcoma of the Gastrointestinal Tract.—McSwain and Beal review 20 cases of lymphosarcoma of the gastrointestinal tract that were treated in the New York Hospital during the past nine years. The number of carcinomas of the gastrointestinal tract seen during this period shows that there is 1 case of lymphosarcoma to every 51 cases of carcinoma. All areas of the gastrointestinal tract except the duodenum were involved. There was 1 lymphosarcoma of the esophagus, the stomach was the site of the lymphosarcoma in 7 patients, the small intestine in 3 patients, the appendix in 2 patients and

the large intestine in 7 patients. Lymphosarcoma of the gastrointestinal tract is rarely recognized before operation. The survival of the patient is influenced more by the site and extent of the growth than by the histologic type of neoplasm or the age of the patient. The prognosis depends largely on whether the lymphosarcoma is localized and can be treated as an isolated lesion or whether a general spread has occurred. The 6 patients in whom the lesion was sufficiently localized to allow extirpation have survived from two to seven years without receiving roentgen therapy. Of the 6 patients given roentgen therapy alone, only 2 are without evidence of recurrence. In 2 cases resection of the lesion was followed by irradiation without evidence of a return of tumor. In 4 resection followed by irradiation gave poor results. In 1 case irradiation was started five months after operation, obviously too late for maximum prophylactic value; in another case the therapy was tolerated so poorly that it was discontinued. Nine patients are alive and well at present, without evidence of recurrence from one year to nine years and five months since the diagnosis was established. The mortality at present is 42 per cent (9 of the 19 cases followed). In eight patients who died, the average duration of life was twenty-four months.

Bulletin New York Academy of Medicine, New York 20: 73-132 (Feb) 1944

- Treatment of Lobar Pneumonia. N. Plummer —p. 73.
Modern Treatment of Peptic Ulcer. A. Winkelstein —p. 87.
Digestive Tract Disturbances in Relation to Rectal and Anal Conditions. H. B. Stone —p. 99.
Role of Internist in Management of Sterility. W. H. Cline —p. 106.

Cancer Research, Baltimore

4:73-144 (Feb) 1944. Partial Index

- Lymphoid Tumors in Mice Receiving Steroid Hormones. W. U. Gardner, T. F. Dougherty and W. L. Williams —p. 73.
Attempts to Induce Stomach Tumors. II. Action of Carcinogenic Hydrocarbons on Stock Mice. P. R. Peacock and A. H. M. Kirby —p. 88.
Id. I. III. Effects of (a) Residue of Cholesterol Heated to 300 C, and (b) A 3,5-Cholestadiene. A. H. M. Kirby —p. 94.
Experimental Brain Tumors. IV. Incidence in Different Strains of Mice. H. M. Zimmerman and Hildegard Arnold —p. 98.
Comparative Studies on Radiosensitivity of Normal and Malignant Cells in Culture. L. Doljanski, G. Goldhaber and L. Halberstedt —p. 106.
Retention of Radioactive Phosphorus When Administered in Different Chemical Forms. S. Warren and R. F. Cowing —p. 113.
Effect of Exercise on Growth of Mouse Tumor. H. P. Rusch and R. E. Kline —p. 116.
Cutaneous Carcinoma: IV. Analysis of 20 Cases in Negroes. R. Schrek —p. 119.
Studies in Esterase (Butyric) Activity. III. Effect of Foster Nursing on Esterase Content of Blood Serum and Liver of Strains of Mice Susceptible or Insusceptible to Mammary Cancer. V. R. Khoskar and R. G. Chitre —p. 128.

Diseases of Chest, Chicago

10:1-86 (Jan-Feb.) 1944

- Autonomic Nervous System in Relation to Thoracic Viscera. A. Kuntz —p. 1.
Atypical Pneumonia of Unknown Etiology. Clinical, Roentgenologic and Pathologic Correlation. F. B. Lusk and E. K. Lewis —p. 19.
New Era in Fight Against Microbes. P. Schonwald —p. 41.
Use of Sodium Hypochlorite in Concentration of Tubercle Bacilli. N. Nagle, J. Lazarov and J. C. Willett —p. 47.
Experiences in Program for Control of Pulmonary Tuberculosis in Chicago. R. Davison and E. P. Troy —p. 54.
Clinically Primary Tuberculosis of Pericardium. M. J. Fine and S. Katz —p. 60.

Atypical Pneumonia of Unknown Etiology.—Lusk and Lewis studied the syndrome variously designated as primary atypical pneumonia, nonbacterial bronchopneumonia, virus pneumonia, pneumonitis, interstitial pneumonia or interstitial bronchopneumonia. While its causative agents are unknown, its kinship clinically, roentgenologically and pathologically with the group known to be of virus origin, such as influenza A or B or ornithosis (psittacosis), justifies speaking of it as a virus disease. It should not be considered a new disease, having been found in sections of lungs removed from soldiers during the Civil War (MacCallum) and preserved in the Army Medical Museum. The pathologic aspects resemble those seen in the influenzal and streptococcic pneumonias and empyemas occurring in military camps in 1918. The authors set up criteria to

which the syndrome must conform before a diagnosis of atypical pneumonia of unknown etiology can be made. They studied (1) the physical and x-ray findings in atypical pneumonia, (2) the pathologic changes as seen in their own patient who died with atypical pneumonia and that submitted to them by the Army Medical Museum and (3) the types of pneumonia they observed in measles and scarlet fever. Their impressions are based on a critical analysis of about 500 patients who represented a cross section of some 6,000 cases of acute epidemic respiratory tract infection in the admissions to the Station Hospital, Fort Custer, Michigan, from Dec 1, 1942 to June 1, 1943. Studying these 500 cases they observed that 60 per cent terminated during the period of invasion without involvement of the lungs, 15 per cent justified the diagnosis of bronchitis based on physical findings and 25 per cent presented pneumonia proved by x-ray examination. The authors emphasize that atypical pneumonia should not be considered a disease entity but part of a syndrome in which the pulmonary lesions are but one manifestation of a generalized infection. So considered it might well be a physiologic accident and not a pneumonia in the accepted sense of the term. It is an interstitial pneumonitis, and the pathologic changes are similar to those found in other virus infections of the pulmonary tract.

Florida Medical Association Journal, Jacksonville

30:269-312 (Jan.) 1944

- Considerations for Better Understanding of Use of Blood Bank. Report of 4 Cases. H. H. Whitney —p. 283.
Fatality From Air Embolism Following Attempted Abortion. R. R. Killinger and C. C. Collins —p. 286.

30:313-360 (Feb) 1944

- Lewis's Tumor of Temporal Bone. Report of Case. S. B. Forbes —p. 331.
A Brute. Pseudo Genus Homo. W. McKibben —p. 336.

Journal of Bacteriology, Baltimore

47:1-114 (Jan) 1944

- Utilization of Fixed Nitrogen by Azotobacter and Influence on Nitrogen Fixation. C. K. Horner and T. E. Allison —p. 1.
Antibacterial Action of Surface Active Cations. E. I. Valko and A. S. DuBois —p. 15.
Microbiologic Aspects of Riboflavin. I. Introduction. II. Bacterial Oxidation of Riboflavin to Lumichrome. J. W. Foster —p. 27.
*Microbiologic Aspects of Penicillin. VI. Procedure for Cup Assay for Penicillin. J. W. Foster and H. B. Woodruff —p. 43.
Comparative Study of Materials Suitable for Cultivation of Clostridia. Harriette D. Vera —p. 59.
Resistance of Meningococci to Drying. C. P. Miller and Doretta Schad —p. 71.
Germicidal Action of Daylight on Meningococci in Dried State. C. P. Miller and Doretta Schad —p. 79.
Observations on Effect of Ultraviolet Irradiation (Knott Technique) on Bacteria and Their Toxins Suspended in Human Blood and Appropriate Diluents. G. P. Blundell, L. A. Erf, H. W. Jones and Regina T. Hoban —p. 85.
Demonstration of Sulfonamide Inhibitor Production by Bacteria on Agar Containing Sulfonamide. R. M. Pike and Alice Zimmerman Foster —p. 97.
Misuse of Name "Trichophyton Rosaceum" for a Saprophytic Fusarium. C. W. Emmons —p. 107.

Cup Assay for Penicillin.—Foster and Woodruff say that the publication of this paper was prompted by the numerous inquiries pertaining to details of the cup assay procedure following the appearance of their recent article discussing the principles, advantages and disadvantages of the various methods of assay for penicillin. The inquiries revealed that numerous features of the test which are taken for granted by workers experienced with this method are quite unknown to the great majority of people who assay penicillin and that there is no source in the literature where details of the complete procedure are available. This paper is intended to provide such information. It contains also a number of points of practical efficiency value which have evolved in a laboratory that handles 100 to 400 cup assays in quadruplicate daily. The principle of the assay is that originally described by the Oxford group, but the procedure has since undergone substantial modification. The authors evaluate the H strain of *Staphylococcus aureus* and a strain of *Bacillus subtilis* for the cup assay. They describe the preparation of the spore inoculum, the preparation of the plates, the setting up of the cups and samples, the measurement of the inhibition zones and the calculation of the results.

Kansas Medical Society Journal, Topeka

45:1-36 (Jan.) 1944

Viscerourologic Complications. O. W. Davidson.—p. 1.
Management of Bleeding Nipple. H. H. Hesser.—p. 3.
Modern Mexican Medicine. C. H. Darrow.—p. 4.

45:37-72 (Feb.) 1944

Medical Problems in the Pacific. G. W. Smith.—p. 37.
Tuberculosis: Viscerourologic Complex. O. W. Davidson.—p. 45.

Michigan State Medical Society Journal, Lansing

43:97-176 (Feb.) 1944

*Abnormal Uterine Bleeding After Middle Age. R. D. Mussey and T. R. Wilson.—p. 129.
Congenital Heart Block: Report of Case. L. T. Colvin and M. L. Lichter.—p. 138.
Aid in Abdominal Palpation. A. A. Farbman.—p. 141.
What Price General Paresis? W. Scholten.—p. 142.
Osteogenic Sarcoma of Upper Third of Femur: Well Ten Years After Disarticulation at Hip Joint. H. C. Saltzstein.—p. 145.
Primary Atypical Pneumonias of Unknown Cause: "Virus" or "Viral" Pneumonias; Case Report of Similar Disease Without Pneumonia. H. A. Reimann.—p. 147.

Abnormal Uterine Bleeding After Middle Age.—Mussey and Wilson review the records of 200 women who registered at the Mayo Clinic between July and September 1937 because of abnormal uterine bleeding. The cases were selected from 1937 so that the results of treatment could be reviewed after an interval of five years. Many women past the age of 35 or 40 view abnormal bleeding as a manifestation of "change of life" and fail to consult a physician. This results in many avoidable deaths. Although abnormal vaginal bleeding may occur without implying serious organic disease, no patient past the age of 35 years who notes abnormal uterine bleeding, especially metrorrhagia, should be dismissed until it is reasonably certain that a malignant condition does not exist. Women with such symptoms should not be given endocrine therapy until malignant disease has been ruled out. Many of the causes of abnormal vaginal bleeding can be discovered by thorough pelvic examination. This should include inspection of the urethral meatus and vaginal introitus and bimanual palpation of the cervix, uterus and adnexa. Examination of the vagina by speculum, with direct visualization of the mucous membrane and cervix, never should be omitted. Biopsy should be done of any lesion which arouses suspicion. Except in pregnancy, diagnostic curettage should be used in every instance in which there is doubt about the character of the uterine contents. The conditions responsible for the bleeding have been divided into benign, functional, malignant and postmenopausal conditions. After discussing these different conditions and their treatment the author says that, although a review of 200 cases should give a good sampling, relatively atypical proportions were found of (1) minor benign conditions causing abnormal uterine bleeding, (2) more severe benign conditions requiring hysterectomy or irradiation and (3) carcinoma of the uterus. In an average office practice one should encounter a much larger proportion of minor conditions, proportionally fewer cases of fibromyoma and a still smaller proportion of malignant lesions. The authors found 80 cases (40 per cent) of uterine fibromyoma and 27 cases (13 per cent) of carcinoma of the uterus. Uterine bleeding in the presence of fibromyoma is usually successfully treated by hysterectomy if the patient has not reached the age of 40 or 42 years, to preserve ovarian function. Hysterectomy is done at any age if the tumor is larger than a uterus two and half to three months pregnant. Patients who are more than 42 years of age and whose uterus is smaller are given a dose of radium sufficient to bring on the menopause. Aside from exceptional cases, curettage should be performed prior to radium treatment. Radium, when used to control menorrhagia associated with fibromyoma, stopped the excessive bleeding in all but 2 of 17 cases. The results of total hysterectomy for carcinoma of the body of the uterus, with a rate of cure of 63 per cent, appears to justify continuance of this treatment. The rate of cure of 37 per cent for carcinoma of the cervix following irradiation with radium and x-rays conforms to the usual results. The curability of early carcinomatous lesions is much greater than the curability of the more advanced. In a large majority of cases the warning sign of abnormal uterine bleeding was ignored too long.

Minnesota Medicine, St. Paul

27:1-80 (Jan.) 1944

Diagnosis of Glaucoma. A. G. Athens.—p. 21.
Epidemic Keratoconjunctivitis. K. C. Wold.—p. 25.
Foreign Bodies Lodged in Air or Food Passages. K. A. Phelps.—p. 27.
*Recurrent Venous Thrombosis: An Early Complication of Obscure Visceral Carcinoma. T. Cooper and N. W. Barker.—p. 31.

Venous Thrombosis in Obscure Visceral Carcinoma.—Cooper and Barker point out that the spontaneous development of thromboses in the peripheral veins may be a definite presumptive sign of the presence of obscure visceral carcinoma. They describe 4 cases to illustrate the connection between visceral carcinoma and peripheral thrombophlebitis. They conclude that: 1. Visceral carcinoma is often the predisposing factor in the development of multiple, and sometimes distant, venous thrombosis. This seems particularly true in cases in which the neoplasm arises from or involves the body or tail of the pancreas. 2. In the absence of other obvious causative factors, the development of apparently spontaneous peripheral thrombophlebitis when the patient is 50 years or more or age should suggest a careful search for visceral carcinoma. 3. The formation of a thrombus in many of these instances would appear to be the result of more than simple mechanical obstruction, circulatory stasis or alteration in the structure of the vessel wall. Further study of the factors influencing the coagulation of the blood would seem indicated.

New York State Journal of Medicine, New York

44:113-224 (Jan. 15) 1944

Degree, Extent and Mechanism of Muscle Spasm in Infantile Paralysis. H. D. Bouman and R. P. Schwartz.—p. 147.
Artificial Insemination Aided by Use of Vaginal Diaphragm. B. A. Kornblith.—p. 154.
Fever as Adjuvant to Specific Therapy in Syphilis. E. W. Thomas.—p. 157.
Vitamin Aid in Treatment of Colds: Preliminary Report. C. Ward Crampton.—p. 162.
Sudden Death from Infection and Neoplasm. T. J. Curphey.—p. 167.
Incidence of Deficiency Syndromes. H. T. Kelly and Myrtle Sheppard.—p. 172.
Contribution of Modern Psychiatry to Physician and Surgeon. S. Blanton.—p. 177.
Pneumology. M. S. Lloyd.—p. 180.
Anesthetic Management of Aged Patients with Fractured Neck of Femur. S. G. Hershey and Evelyn Apogi.—p. 183.

Northwest Medicine, Seattle

43:1-30 (Jan.) 1944

Principles of Treatment in Peripheral Nerve Injuries. M. T. Schnitker.—p. 5.
Filariasis. E. C. Faust.—p. 9.
Tumors of Spleen. S. F. Herrmann.—p. 14.
Plastic, Molded Contact Lenses. W. N. Moray Girling.—p. 17.
Contact Dermatitis From Use of Lacquer on Hair. T. S. Saunders.—p. 19.

Physiological Reviews, Baltimore

24:1-168 (Jan.) 1944

Functional Organization of Spinal Cord. D. P. C. Lloyd.—p. 1.
Obesity: I. Energy Metabolism. L. H. Newburgh.—p. 18.
Id.: II. Etiologic Aspects. J. W. Conn.—p. 31.
Cellular Composition of Normal Bone Marrow as Obtained by Sternal Puncture. E. E. Osgood and A. J. Scaman.—p. 46.
Chemical Method for Determination of Death by Drowning. A. R. Moritz.—p. 70.
Role of Adrenal Cortex in Physiologic Processes. W. W. Swingle and J. W. Remington.—p. 89.
Lipotropic Factors. E. W. McHenry and J. M. Patterson.—p. 128.

Public Health Reports, Washington, D. C.

59:1-32 (Jan. 7) 1944

National Inventory of Needs for Sanitation Facilities: I. Public Water Supply. H. W. Streeter and R. Rameri.—p. 1.

59:33-64 (Jan. 14) 1944

Illness from Cancer in United States. H. F. Dorn.—p. 33.
Lesions in Rats Given Sulfathiazole, Sulfadiazine, Sulfanilamide, Sulfamerazine, Sulfapyrazine or Acetylsulfadiazine in Purified Diets. K. M. Endicott, A. Kornberg and F. S. Daft.—p. 49.

Southwestern Medicine, Phoenix, Ariz.

27:297-314 (Dec.) 1943

Years of an Editor. M. P. Spearman.—p. 297.
Maternal Deaths in Arizona During 1942. H. C. James.—p. 298.
Banti's Disease: Apparent Recovery of Case. A. E. Clark.—p. 292.
Abdominal Pregnancy. P. H. Loveless and C. P. Austin.—p. 301.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Medical Gazette, Calcutta

78:527-574 (Nov.) 1943

- *Phenomenon of Autoagglutination in Man After Sulfapyridine. J. G. Parekh.—p. 527.
 War Injuries of Eye: Localization and Removal of Magnetic Intra-ocular Foreign Bodies. E. O'G. Kirwan and M. Sen Gupta.—p. 530.
 *Report on Tropical Ulcers. D. R. Bharucha.—p. 532.
 Sulfonamides in Undulant Fever. P. N. Bardhan.—p. 535.
 Observations on Neuropathic Sequel of Diamidinostilbene Therapy in Kala-Azar. P. C. Sen Gupta.—p. 537.
 Mental Symptoms in Pellagra and Nicotinic Acid Deficiency. L. P. Varma.—p. 543.
 Preliminary Observations on Use of Rauwolfia Serpentina Benth. in Treatment of Mental Disorders. J. C. Gupta, A. K. Deb and B. S. Kahali.—p. 547.
 Sulfapyridine Anuria. R. E. Waterston and C. C. B. Doherty.—p. 549.

Autoagglutination After Sulfapyridine.—According to Parekh, agglutination of a person's red corpuscles by his own plasma or serum is rare. Nevertheless, in human beings this phenomenon has been observed in chronic mitral endocarditis with bronchopneumonia, during convalescence from pneumonia, in trypanosomiasis, in cirrhosis of the liver, in relapsing fever, in syphilis, in epilepsy, in certain forms of icterus due to hemolysis, in secondary anemia, in pernicious anemia after sulfanilamide administration and in snake poisoning. The author reports the history of a man aged 35 in whom autohemagglutination followed the administration of sulfapyridine for a respiratory infection. The agglutination was most noticeable in the cold and was feeble or inactive at 37 C. The process of autoagglutination is reversible.

Tropical Ulcers.—Bharucha reports a series of 179 cases of cutaneous ulcer. His aim was to investigate the cause and to shorten the period of hospitalization. Poor diet, especially one deficient in proteins, calcium and vitamins B and C, also excessive humidity and excessive rainfall, specific organisms such as fusiform bacilli and a high incidence of syphilis have each in turn been labeled as the cause of these ulcers. Weighing all the evidence at his disposal, the author concludes that these so-called tropical ulcers are not caused by a specific organism. He concludes that they started as small injuries which were neglected and became septic. Many of these soldiers after the receipt of minor injuries continued to take part in the training schemes, and they had to continue wearing boots and puttees and had few opportunities for cleaning the injured part or keeping it at rest. He suggests that every soldier who receives any injury, however trivial, should have an opportunity to get the wound cleaned and dressed at the earliest possible moment and be exempt from such duties as involve the constant use of the injured part till healing is complete. Force is added to this suggestion when it is seen that these 179 patients spent in all 6,056 days in the hospital. This does not include the time before admission to the hospital during which they were not fit to work and the time spent by many of them at the convalescent depot.

Journal of Royal Army Medical Corps, London

81:255-306 (Dec.) 1943

- *Diagnosis and Treatment of Yaws Among West African Troops. W. H. H. J. De Wyt.—p. 255.
 Control of Malaria: East Africa Command, 1940-1943. D. B. Wilson and A. R. Melville.—p. 263.
 Common Anorectal Conditions in Army. H. S. Shucksmith.—p. 269.
 Management of Lung Disease of Uncertain Diagnosis. T. Lee.—p. 278.

Treatment of Yaws.—De Wyt analyzes 72 cases of yaws. A table which classifies the cases shows that with the exception of 2 cases of primary yaws all other cases were tertiary. The salient feature of this series is the large proportion of foot yaws, which accounted for 66 per cent of the total. In 33 of the 43 cases of foot yaws a history of intermittent disability with exacerbations during the rainy season was obtained. The diagnosis was based on the presence of "pitting," the hypertrophic epithelium, the history of exacerbation during the rains and the positive Kahn test. Neoarsphenamine and sodium potas-

sium bismuthyl tartrate were used in the treatment. In all 9 cases were treated with neoarsphenamine, the course consisting of an initial dose of 0.45 Gm. followed by weekly doses of 0.6 Gm. up to a total of twelve injections. The remaining cases were treated with intravenous sodium potassium bismuthyl tartrate, the course being twelve weekly injections of 1 grain (0.065 Gm.). The solution used was made in the hospital dispensary with a concentration of 1 grain in 2 cc. of distilled water. The intravenous route was preferred to the intramuscular, as the latter can be very painful and may render the patient temporarily incapable of full duties. Since the exhibition of sodium potassium bismuthyl tartrate may produce renal damage, the urine was tested twenty-four hours after each injection. Persistent albuminuria in 3 cases cleared up after the treatment was changed to neoarsphenamine. Clinical cure was obtained in all 72 cases. The author points out that the treatment recommended by most workers for yaws in adults is three injections of one of the arsenical or bismuth preparations. Many do not seem to realize that, although there is about 50 per cent of cures with this dosage, there is also a high relapse rate. The blood reaction in yaws is known to be very unresponsive to treatment, and it seems reasonable to suppose that this is because the treatment is not carried out for a long enough period. A similar state of affairs obtained in the early days of the arsenical treatment of syphilis, when apparent cure after a few injections was followed later by a recurrence of the disease. It is now known that the treatment of syphilis must be continued until the blood reaction is negative, and it is probable that the same thing is true of yaws.

Archivos Americanos de Medicina, Buenos Aires

19:67-82 (Nov. 1) 1943. Partial Index

- *General Telangiectasis Angioma. E. Martinez Zuveria and I. Naput.—p. 68.
 Required Conditions for Normal Feeding: Diet in Dermatoses in Children. B. Soria.—p. 74.

Multiple Telangiectasis Angioma.—Martinez Zuveria and Naput's patient presented, at birth, multiple telangiectasis angioma which covered the entire surface of the body, including the palms of the hands, soles of the feet and the scalp. Frequent hemorrhages occurred as the result of rupture of the angiomas. The clinical diagnosis of telangiectasis angioma was confirmed by the results of a biopsy. The tests for syphilis in the parents and in the infant gave negative results. During the first four months of the patient's life the angiomas increased in number and size. A hydrocele appeared. The therapy consisted in acetylarsan administration followed by ultraviolet irradiations. The hydrocele was reabsorbed. The angiomas slowly disappeared and the skin became normal within ten months. This is the first case of multiple telangiectasis angioma with entire disappearance from the skin which has been reported in the literature.

Revista Argentina de Cardiología, Buenos Aires

10:145-222 (July-Aug.) 1943. Partial Index

- *Apex Beat in Mitral Stenosis. P. Cossio.—p. 145.

Apex Beat in Mitral Stenosis.—Cossio carried on simultaneous records of the apex beat and of the heart sounds in 10 normal persons, 10 patients with mitral stenosis and 20 patients with various heart diseases (arterial hypertension, auricular fibrillation and nodal rhythm). Two different movements can be distinguished in the early systolic part of the apex beat record, namely a slow beat which is due to initiation of the ventricular systole and a rapid vibrating impact which is due to the systolic tension of the auriculoventricular valves during occurrence of the first heart sound. In normal conditions beat and impact are synchronous, whereas in mitral stenosis the slow beat precedes the rapid vibrating impact. This phenomenon is of almost pathognomonic value. It can also be perceived by palpation. It is attributable to the retarded closure and tension of the mitral valve (first sound) due to the low initial tension of the mitral valve at the beginning of the systole, which is caused by the hemodynamic conditions which exist in mitral stenosis.

Book Notices

Applied Dietetics: The Planning and Teaching of Normal and Therapeutic Diets. By Frances Stern, Chief of Frances Stern Food Clinic, The Boston Dispensary, Boston. Second edition. Cloth. Price, \$4. Pp. 265. Baltimore: Williams & Wilkins Company, 1943.

This edition of a standard manual is based on the methods developed in the Food Clinic of the Boston Dispensary. The first edition was dated 1937. The new edition uses the same mode of presentation as the first but includes the results of later research in nutrition and its application in modern dietetic practice. Most of the information is presented in tabular form. There are fifty-seven tables. These tables present the information about foods and diets from various points of view. Beginning on page 210 and extending through page 255 is a series of tables beginning with summaries of the normal diet in terms of meals for the day for the adult and the child, followed by similar tables for allergic persons, those with spastic constipation, colitis, ulcers, underweight, overweight, diabetes, liver disease, ketogenic diets, nephritis, pregnancy and tables showing typical normal diets and the variations for abnormal conditions. These tables would be more useful if they were numbered. The book includes dietary outlines for the management of normal diets, food allergies and other conditions for which tabulations have been listed. A typical outline is that for atonic constipation, which occupies practically two pages and is dealt with under the headings part of body affected, physiology, abnormal conditions, contributing factors, laboratory data, dietetic treatment, food constituents, foods (foods used, as distinguished from the others for special contributions), meals, environmental factors that influence the effectiveness of the diet, education of the patient, abnormal conditions and diseases that may be found in association with atonic constipation. There is a long series of tables to assist in simpler computation of the diet. These tables are numbered. There is an excellent chapter on the education of the patient on the normal diet.

This book should be invaluable in any hospital dietary department, in the teaching of dietetics to nurses, in the training of dietitians, and as a reference book for physicians in whose work dietary factors are important.

The Boy Sex Offender and His Later Career. By Lewis J. Doshay, M.D., Ph.D., Psychiatrist, Children's Courts, New York City. Foreword by George W. Henry, M.D., Associate Professor of Clinical Psychiatry, Cornell University Medical College, New York. Cloth. Price, \$3.50. Pp. 206, with 12 illustrations. New York: Grune & Stratton, 1943.

Dr. Doshay is an experienced psychiatrist and has worked with juveniles for a considerable period. Most of this present study deals with 256 juvenile sex offenders who have all appeared in court clinics of New York during a six year period. This is an adequate sample because of the small number of juvenile sex offenders that come through the court. The report covers a six year period of study and tends to cover every aspect of the history of the environmental contacts, including parental attitudes. Such factors as nationality of parents, status of the home and sibling relationships are touched on, but friction between the parents is also covered in certain aspects. Other types of factors to which attention is given are community factors, including the neighborhood, recreational and school facilities. The second part of the book deals with the personality of the sex delinquent, including what the author calls "inherent traits," which are age, race, intelligence quotient, disorders of the mind and bodily disorders of temperament, and some attention is given to what the court has done with juvenile offenders. The author concludes with a discussion of adult successes and failures. There are two concluding chapters, one in which the author gives the derived conclusions with a list of twelve questions such as "Do the findings of the study warrant the transfer of management and treatment of juvenile sex offenders from the courts to the community agencies?" The answer to this question is that the question will find answer in the next chapter. The final chapter deals with predicting treatment and prevention. Probably the most important conclusion to which the author comes, based on his mass of statistical material, is that the juvenile sex delinquent boy seems to be self curing. This is an important conclusion. The court clinic in Detroit

has pointed this out again and again, but Doshay's findings, based on juveniles including six years of careful follow-up, stresses this important fact. Much of the statistical material that Doshay prints is not worthy of the attention he gives it. The figures and tests of validity are not applicable to those statistics. Some of the distributions are spread so thin that no conclusions can be drawn from them. All in all, however, this very careful and well written survey gives a general impression about the male juvenile sex offender which those having to do with such cases should find interesting.

A Practice of Orthopaedic Surgery. By T. P. McMurray, M.B., M.Ch., F.R.C.S., Professor of Orthopaedic Surgery, Liverpool University. Second edition. Cloth. Price, \$7. Pp. 435, with 191 illustrations. Baltimore: William Wood & Company, 1943.

The author's objective is the instruction of young surgeons and final year students in the basic principles of orthopaedic surgery. He has adhered to unadulterated orthodox practice. The section on the knee reflects the opinion of a recognized authority with an extensive training and experience. The McMurray test has been found helpful in the diagnosis of many cases of internal derangements of the knee. Much can be learned from a carefully taken history of the injury. The occurrence of pain and its exact site are of importance, and the joint must be carefully palpated to localize any area of tenderness. The stability of the lateral and crucial ligaments must be tested and the full range of painless movement carefully measured. The whole surface of the joint should be palpated while the patient bends and straightens it through its fullest possible range. Radiographic examination of the joint in at least two planes at right angles to each other is of the greatest help.

If in spite of the most careful routine examination the diagnosis is still in doubt, various accessory methods can be employed, of which the following has proved itself to be the most reliable: This method of examination by manipulation is of particular value in those injuries to the cartilage in which the lesion involves the meniscus at or behind the middle of the joint. Lesions of the cartilage in this region do not give rise to the classic syndrome of "locking" and "unlocking" because any reduplication of the broken portion of the cartilage produces a block to flexion rather than to extension of the joint. When the test is correctly applied, not only can the presence of a lesion be determined but its exact site can be mapped out with comparative certainty. During the examination the patient must be recumbent and relaxed; the surgeon, standing on the side of the injured limb, grasps the foot firmly, while the knee is bent to its fullest possible range until the heel approaches or touches the buttock. The foot is now rotated externally and the leg adducted at the knee. With the leg and foot at this angle, the knee is slowly extended. With the alteration of the angle of the joint, any loose portion of the internal cartilage is caught between the articular surface of the femur and tibia, and the sliding of the femur over the abnormal portion of the cartilage is accompanied by an appreciable click and pain, which the patient states is the same that he has already experienced when the knee gave way. The examination should be completed by a similar extension of the knee from full flexion while the foot is rotated inward and the leg adducted. If no click can be produced by these movements properly conducted, it may be safely considered that the internal cartilage is normal posteriorly. If a click is produced it is possible to determine, from its severity and the angle of the joint at the time of its occurrence, the size of the broken portion of the cartilage and its site in the cartilage substance.

Occasionally when the patient is particularly nervous the examination cannot be properly completed without the help of general anesthesia.

Health for the Having: A Handbook for Physical Fitness. By William R. P. Emerson, A.B., M.D., Professor of Pediatrics, Tufts College Medical School, Boston. Cloth. Price, \$1.75. Pp. 116. New York: Macmillan Company, 1944.

The title of this book promises more than the book delivers. The health problem is not so simple that one can speak justifiably of "health for the having." Especially is this true when it develops that the book is built on ideas which were current in health education immediately after the first world war. There

He thinks that the simple passage of these organisms through the urinary tract causes a reaction sufficient to precipitate an attack of herpes.

Some such slight disturbance of health may have brought on the attack of herpes in the case described. A hidden infection may have taken place, causing sufficient disturbance to bring out the herpes but not at the time causing other symptoms. During the following week sensitization to the infecting germ or virus developed, as occurs in so many diseases, and the fever resulted. If the infected area had been in the upper air passages, the extension to the ear drum and submaxillary gland could easily have occurred. The second skin lesion, on the finger, may have been a second herpes lesion or a complicating impetigo cut short by the ointment.

RECURRENT BLOODY PLEURAL FLUID WITH REPEATED ESCAPE AND REABSORPTION IN CHEST WALL

To the Editor:—A woman aged 54 has had a chronic cough for several years. There is no history of tuberculosis. She has had vague digestive trouble for six months and has lost 20 pounds (9 Kg.). She has a pigmented mole measuring 1 by 2 centimeters over the right ilium. The patient was seen after she had had a sudden severe attack of pain in the right dorsolumbar region. The temperature was 99.5 F. There were no dyspnea, no aggravation of the cough, some pain on deep breathing but more on motion of the back. No abnormalities were discovered in the lung. My diagnosis was lumbago. I made a third visit nine days later and found the right side of the chest full of fluid and the patient had considerable mechanical difficulty with respiration. She was tapped of 1,500 cc. of bloody fluid. This fluid gave negative results on culture and smear, negative guinea pig inoculation for tuberculosis and no tumor cells. For two and a half months she was tapped on an average of once in four to five days of the same bloody fluid in quantity from 500 to 2,500 cc. Indication for tapping was increasing dyspnea. Eighty days after onset I received an urgent call to tap the fluid. However, when I arrived she was improved and I discovered that the right breast was full of fluid and this swelling rapidly spread into the axilla and down as far as the crest of the ilium. Since that time she has not been tapped again but undergoes the following sequence of events: The fluid gradually absorbs, the dyspnea increases until it is quite severe, she has a coughing spell, the fluid again fills the subcutaneous tissues and the dyspnea is relieved. Prior to this dramatic change in events the patient was rapidly failing but since then, since she no longer loses this large amount of nourishment, she has been gradually improving and is now in good condition except that the chest is full of fluid and she is unable to sit up or lie on the left side. Her appetite is excellent, digestion is good and she has no complaint except dyspnea when the chest fills. She has never been able to sit up for x-ray examination, and the films show only a chest full of fluid. Physical examination at present reveals the entire chest flat to percussion; the heart and mediastinum are shoved over, depending on the amount of fluid; the heart irregular, sounds are clear and the rate is moderate; there are no tumors in the abdomen; vaginal examination is negative; reflexes are normal; the Kahn test for syphilis is negative. The pigmented mole shows no sign of activity. Temperature is normal. My first diagnosis was cancer of the lung or pleura. However, it is now eight months since the onset, and the improvement in the patient's condition now makes me doubt that diagnosis. The sudden onset suggests embolism, but I have been able to discover no source of a possible embolism. Might such a condition be caused by an aseptic infarct of the lung? The fluid is strongly blood tinged, in fact quite opaque.

Escape of chest fluid in this way must be unusual. Presumably it escapes through the multiple puncture holes or a tumor is invading the chest wall.

C. H. Holliman, M.D., Watsonville, Calif.

ANSWER.—The case described is certainly unusual. When one encounters bloody fluid in the pleural cavity one thinks of three things: tumor, which accounts for probably 90 per cent of cases; tuberculosis, which accounts for an occasional case, and infarct, which accounts for a few cases. The fact that the patient is improving after eight months is against tumor. Infarct usually clears rapidly and the fluid absorbs in a few weeks. Negative smears and guinea pig inoculations do not absolutely rule out tuberculosis.

Spontaneous drainage into the tissues of the chest wall is rare in aseptic effusions. The repeated spontaneous drainage of the kind described here is difficult to understand. Ordinarily the tissue spaces become indurated and scarred and fail to absorb fluid after the first few weeks.

The indications appear to be to aspirate the fluid more rapidly than it reforms and eventually rid the pleural cavity of all fluid. This could be done over the course of a few days. Some air might be reinjected to prevent too great change in the pleural pressure. An x-ray film could then be taken with the patient in the sitting position. The fact that the patient's mediastinum is pushed far to the opposite side is a definite indication for more complete and frequent aspiration.

No patient should be considered too ill to have an x-ray film in the sitting position. In cases of this kind it is frequently extremely difficult to make a certain diagnosis. As long as the patient is afebrile and the fluid is sterile the only treatment indicated, whatever the condition, is repeated aspiration and

rest. If this is done one can be sure that one is not missing any therapeutic opportunities. The uncertainty in diagnosis is bothersome but sometimes has to be faced. Note should be made of the fact that amebic liver abscesses occasionally break through into the pleural cavity and produce thick bloody fluid. In these cases septic fever is constant.

DIGITALIS FOR PATIENT WITH HEART BLOCK AND DECOMPENSATION

To the Editor:—Following physical and emotional strain due to the hurricane of 1938 a seventy-six year old man has been the subject of complete heart block. For the past three months he has been decompensated as evidenced by dyspnea, orthopnea, pulmonary congestion and dependent edema of the lower extremities. For the past three weeks he has been under my care. Prior to that time he was not only advised, but warned, never to take digitalis. I personally feel that with decompensated complete heart block he should be taking digitalis. For the past three weeks his pulse rate has been 36 to 39. Blood pressure is 180/80. He is now receiving 1.5 cc. of mercupurin intravenously twice a week and this has relieved his pulmonary congestion considerably, but not his dependent edema. Fluids and salt have been restricted. Should digitalis be used in this case and, if so, what would be the dangers attending its use, how would one avoid overdosage without being able to note changes in pulse rate, would periodic electrocardiographic checkups be necessary? Edward Gliserman, M.D., Niantic, Connecticut.

ANSWER.—The presence of complete heart block without Adams-Stokes attacks is not a contraindication to the use of digitalis when it is needed in the treatment of congestive heart failure, as it is in the case described. In the past, all sorts of other contraindications to the use of digitalis have also been held and one by one dispelled. These have included hypertension, aortic regurgitation and alternation of the pulse.

There should be no variation from the usual method of digitalization except for a little closer watch of pulse rate and symptoms. Although it is possible to depress the ventricular pacemaker to a low level by digitalis, this does not usually happen. It is persons with partial auriculoventricular block and Adams-Stokes attacks who must be watched particularly, rather than those with well established complete heart block. Occasional electrocardiograms are, however, desirable, although not absolutely essential, preferably three, namely just prior to digitalization, toward the end of digitalization and a few weeks later.

REACTIONS FROM AMINOPHYLLINE INTRAVENOUSLY

To the Editor:—Susan C. Dees of Duke University (*J. Allergy* 14:492, 1943) mentioned any degree of right sided cardiac failure as a contraindication to intravenous use of aminophylline, reactions having been caused by its use. Could you explain why such is the case and its possible mechanism?

Lawrence H. Hoffman, M.D., San Francisco.

ANSWER.—The reason that right sided cardiac failure represents a contraindication to intravenously administered aminophylline is not clear, since the drug has been widely employed, both orally and intravenously, as a diuretic in congestive heart failure. A detailed report of these reactions, of which several were fatal, is being prepared by Dr. James Hendrix and may be expected to help explain the mechanism.

Severe and occasionally fatal reactions have occurred with the use of intravenous aminophylline in other types of heart disease and in uncomplicated asthma. The majority of the fatal cases, however, have been associated with serious heart disease. In these instances the aminophylline was apparently diluted and administered slowly with the usual precautions.

The rapidity of the reaction in some cases with respiratory and cardiac arrest might suggest a central origin.

References:

- Merrill, George Adams: Aminophylline Deaths, *THE JOURNAL*, Dec. 25, 1943, p. 1115.
- Dees, Susan C.: Personal communication.

ANOPHELINE MOSQUITO ONLY VECTOR FOR MALARIA

To the Editor:—Has any work been done in determining the fate of *Plasmodium vivax*, *Plasmodium falciparum* or *Plasmodium malariae* when ingested by any mosquito or insect other than *Anopheles*?

Captain, M. C., A. U. S.

ANSWER.—Much work has been done in determining whether mosquitoes other than *Anopheles*, or various blood sucking insects, could transmit human malaria. In every instance the results have been uniformly negative. As malaria occurs only in association with different species of *Anopheles* mosquitoes, and since the prevalence of the disease can be definitely correlated with the efficiency or number of *Anopheles* vectors, it is extremely unlikely that any other species of insects can transmit the disease.

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THE RICKETTSIAL DISEASES

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Rickettsias are gram negative micro-organisms, coccoid or bacillary in form, found typically in arthropods. Those known to be pathogenic for man occur intracellularly in the tissues of their animal and arthropod hosts. These organisms have never been cultivated on artificial mediums free from living cells, but they grow and multiply in the various tissue culture mediums. With the exception of the rickettsia of Q fever, they do not pass filters that retain pathogenic bacteria. Several species that are not known to be associated with any disease of man or other animal have been described and named, and one species has been described that is pathogenic for lower animals but not, apparently, for man—this is *Rickettsia ruminantium*, the causative agent of "heart water disease" of sheep, goats and cattle; the identification of these organisms is based on appearance, staining reactions and occurrence in arthropods. Bodies resembling rickettsias have been isolated from cases of trachoma and psittacosis, and while there is not at the present time conclusive evidence on which to base the classification it is possible that further knowledge may place these bodies in the class Rickettsia.

The diseases of man with which species of Rickettsia are associated and of which the epidemiologic character is determined by the life cycles and the feeding habits of the arthropod vectors may be divided into four subdivisions: typhus, Rocky Mountain spotted fever, tsutsugamushi and Q fever. Q fever stands a little apart, differing somewhat from the other rickettsial diseases clinically and in the fact that the organisms readily pass through bacterial filters which retain the other strains of pathogenic rickettsias. Trench fever has often been classified as a rickettsial disease since it is louse borne and rickettsias have been described in lice and their feces which subsequently have infected volunteers. Opportunities for the careful study of trench fever have been lacking since it disappeared with the close of World War I. However, it has appeared in the European sector of the present war, and studies now in progress in Europe may clear up its relationship to rickettsias.

A characteristic of this group of diseases with the exception of Q fever is the production in patients of agglutinins for the X strains of *Bacillus proteus* (*Proteus vulgaris*). This agglutination of *B. proteus* X (Weil-Felix reaction) has been of great assistance in distinguishing the tsutsugamushi group from the typhus and spotted fever groups, since with tsutsugamushi agglutinins for the OXK strain of *B. proteus* are typi-

cally produced while the serums of patients with typhus and spotted fever agglutinate the OX₁₉ and OX₂ strains. No strain of *B. proteus* has been found which is agglutinated by Q fever serums, and the production of agglutinins in trench fever is as yet unknown. There are definite immunologic differences, illustrated by absence of cross immunity, which separate the subdivisions of the rickettsial infections.

Clinically the typhus, spotted fever and tsutsugamushi groups are characterized by sudden onset, rash, fever of fairly well defined duration, mental disturbance and pronounced prostration.

The typhus subdivision of the rickettsial infections comprises the epidemic or louse borne type and the endemic, murine or flea borne type. The Rocky Mountain spotted fever subdivision is not so clearly delineated as yet but includes in addition to Rocky Mountain spotted fever other identical or similar tick borne diseases, such as boutonneuse fever, the misnamed São Paulo exanthematic typhus, Tobia fever of Colombia, Kenya typhus and possibly the so-called tick typhus of India and South African tick bite fever. The tsutsugamushi subdivision embraces, in addition to the type disease, the disease known as scrub typhus and other of the mite borne diseases of southern Asia and the islands of the Southwest Pacific.

Of the rickettsial diseases typhus is of greatest military importance. The Rocky Mountain spotted fever group is apparently not of much military significance, although cases have occurred in military personnel and the tsutsugamushi group is occurring to some extent among our troops in the southwest Pacific zone.

EPIDEMIC TYPHUS

Synonyms.—Spotted typhus, petechial fever, jail fever, ship fever, camp fever, typhus exanthematicus, fleckfieber (German), el tabardillo (Spanish), typho-
esantematico (Italian).

Epidemic typhus is an acute infectious disease caused by *Rickettsia prowazeki*. The disease is characterized by a fairly sudden onset and a continuous fever of about two weeks terminating by crisis or rapid lysis. The most distinctive feature is a macular rash, which appears usually on the fifth or the sixth day. Persons of all ages and both sexes are susceptible.

History and Distribution.—Typhus has been one of the great pestilences of history. The earlier accounts of epidemics of diseases are not definite enough to allow the sure identification of any as typhus, but there is little doubt that, in 1489, 17,000 of the soldiers besieging Granada died of typhus. In the succeeding century a petechial fever, probably typhus, within a span of four years (1550-1554) destroyed 100,000 people in Tuscany. During the Thirty Years' War, 1619-1648, typhus repeatedly ravaged Europe. The disease appeared often in England and Ireland in the seventeenth, eighteenth and nineteenth centuries, Ireland

becoming one of the principal endemic centers of the disease. The French Revolution, the Napoleonic wars, the Crimean War and the World War of 1914-1918 were all marked by typhus. At the close of the World War the disease was prevalent in Poland, Russia and Rumania, causing close to a million deaths in the last country. The estimates of typhus cases and deaths in Russia between 1919 and 1923 run into millions.

In the Western Hemisphere epidemic typhus appeared in Mexico shortly after the Spanish conquest. It appeared in South America following the Spanish conquest of Peru, and in the highlands of Central and South America it has since remained endemic. Typhus was brought to Canada in 1659 and several times in the eighteenth and nineteenth centuries. One of the first years of Irish immigration in great numbers into Canada was 1847. Ireland, as previously mentioned, being one of the endemic foci of the disease. Of 84,445 persons immigrating into Canada that year, 75,540 were Irish. Among these there were 30,265 who sickened with typhus; 5,293 died at sea, 8,012 at Quebec and 7,000 at Montreal, making a total of 20,305 deaths. Typhus was introduced also into the various seaports of the United States at various times during the eighteenth and nineteenth centuries. This form of typhus (louse borne) has never established an endemic focus in this country or in Canada. It is noteworthy that our Civil War is one of the few wars of any magnitude in which cases of typhus did not appear in great numbers.

At the present time epidemic typhus has definite endemic foci in the highlands of Central and South America, North Africa and some parts of Central and South Africa, in Spain, in parts of France and Germany and in the invaded states of East Europe, in Russia, Turkey, Iran and Iraq, in Afghanistan and in China. There has been a definite increase in epidemic typhus in the European and North African zones since the inception of the present war.

Transmission.—Epidemic typhus is transmitted from person to person by body lice. Rickettsias are present in the feces of typhus infected lice in great numbers, and it is probable that from deposits of such feces they gain entrance to the body through abrasions in the skin. The high morbidity rate among doctors and nurses in epidemics of typhus, coupled with the fact that as a group such persons are surrounded by careful precautions with regard to protection against lice, suggests that actual contact with lice may not always be necessary. It has been shown that rickettsias remain viable and retain their virulence for many days when in dried feces of lice, and since laboratory animals can readily be infected by intranasal inoculation and since the disease has developed in laboratory workers presumably after inhalation of infectious material it seems possible that the inhalation of dried infected louse feces or the deposition of air borne infected material on the mucous membranes may be responsible for some cases.

Epidemiology.—The chief epidemiologic characteristics of epidemic typhus are as follows:

1. It occurs among populations disorganized by war, famine and social revolution.
2. It occurs first and most commonly in the poorer sections of cities, in concentration camps and in prisons.
3. It is readily transmissible from person to person through the agency of the body louse.
4. It is associated with lousiness.
5. The peak of prevalence is in the winter and spring.

There is no difference in susceptibility conferred by sex. One attack usually confers immunity which may not be permanent. There is some evidence to indicate that the more severe the attack the more lasting is the subsequent immunity.

Clinical Features.—The incubation period falls between five and fifteen days; the usual time is eight to twelve days. The onset may be preceded by one or two days in which the patient experiences malaise, headache, loss of appetite and at times nausea. In the majority of cases the disease begins abruptly with rapidly rising fever, repeated chills (not often severe) and headache.

The fever rises steadily during succeeding days, usually reaching its maximum by the end of the first week. Morning remissions of fever occur. These remissions may be slight during the second week. The fever falls usually by rapid lysis after about fourteen days, patients with uncomplicated typhus ordinarily being afebrile by the sixteenth day after the onset.

Headache is a prominent symptom, being severe and difficult to relieve. It often persists throughout the illness and may be the chief symptom complained of by the patient. Prostration and signs of cardiac weakness may be evident from the onset, usually becoming pronounced by the second week of the illness. Constipation may be troublesome throughout the illness. The general features of prostration tending toward stupor and delirium become more grave in the second week. In severe disease with definite cardiac weakness there is a tendency toward development of gangrene of the extremities, more frequently of the toes. Mental disturbance is common. This may vary from confusion, disorientation, restlessness, insomnia and irritability to delirium. Generalized aching and soreness of the eye muscles are often present. Nosebleed sometimes occurs.

In cases of severe involvement which end in recovery there is often a sharp change toward the end of the second week. If the disease is uncomplicated the temperature falls and the stuporous condition disappears about the fourteenth day. Prostration and cardiac weakness continue for a varying length of time after defervescence, depending to a great extent on the age of the patient, those in the lower age groups recovering more quickly. In cases which proceed to a fatal outcome the prostration and the mental cloudiness increase, and coma occurs.

Some evidence of involvement of the respiratory system is usually present. This varies from a mild cough, which may never be troublesome, to definite bronchopneumonia.

The most characteristic feature of the disease is a rash which appears on the fourth to sixth day after onset of the illness. Rarely it may appear as early as the third or as late as the ninth day. The rash consists of rose red macules and papules. These lesions at first disappear on pressure but rapidly become petechial and darker as the disease progresses. In severe involvement coalescence of the lesions occurs. The eruption appears first on the inside surfaces of the upper arms or on the sides of the chest and the upper part of the abdomen and spreads to the rest of the chest, the back, the arms and the legs, usually being less pronounced on the extremities. The palms and the soles may be involved, while the neck and face are seldom included in the area of distribution. The

rash becomes brownish as recovery ensues, usually disappearing during defervescence. In some cases the remnants of the rash may be discernible for several weeks.

The pulse rate often remains below 120 or even 100. A rate of over 130 indicates severe involvement with a doubtful prognosis. Not uncommonly there is a drop to a rate lower than normal (50 to 60) during convalescence, the pulse gradually regaining the normal rate as strength returns. On recovery from a severe attack, shortness of breath may be noticeable for several weeks. Recovery once assured is usually complete and sequelae are absent.

The fatality rate varies from 20 to 60 per cent in different epidemics. In the same epidemic the rate may be below 5 per cent in children and over 80 per cent in those over 50 years of age. In sporadic cases in interepidemic periods the rate is much lower.

Complications.—Among the complications which may be encountered are bronchopneumonia, parotitis, otitis media, mastoiditis and thrombosis of various veins.

Laboratory Findings.—In many instances albuminuria is present at the height of the illness. It clears with convalescence.

Cytologic examination of the blood shows nothing characteristic. The white cell count varies from one indicating moderate leukopenia to one of about 12,000, with occasional uncomplicated cases showing as many as 15,000 white cells per cubic millimeter.

The Weil-Felix reaction usually becomes positive during the second week of illness, reaches its height about the time convalescence is established and disappears rather rapidly. It is advisable to test at least two samples of serum, one taken early in the illness and a second late in the second week. With a sensitive antigen the serums of patients with typhus often reach a titer between 1:10,000 and 1:100,000. The OX₁₉ strain of *B. proteus* is more commonly agglutinated than OX₂ and is the strain customarily employed. The serums of patients with Rocky Mountain spotted fever also show the Weil-Felix reaction in high titers and consequently this reaction is of no practical value in differentiating between the two diseases. Serums from persons suffering from other illnesses not related to the rickettsial diseases may show the Weil-Felix reaction in dilutions as high as 1:320 and occasionally 1:640.

Recently it has been found that complement fixation can be utilized in the diagnosis of typhus. This test, with typhus rickettsias used as an antigen, becomes positive during the second week of the disease and may remain positive for many years. It is of value in differentiating typhus from Rocky Mountain spotted fever.

Pathology.—Grossly there is little else than the partially faded exanthem, moderate splenic enlargement and the frequent presence of complicating bronchopneumonia. The essential lesion is focal injury of capillary and precapillary vessels, characterized by endothelial swelling, proliferation and necrosis with thrombosis and by nodular perivascular exudation of lymphocytes, plasma cells and monocytes. Such lesions are most frequent in the skin, heart, great vessels, kidneys, adrenal glands, testes, epididymides and especially the brain, the cerebral cortex being usually the most involved. Very characteristic are small paracapillary nodes of microglia. Splenic hemorrhages, erythrophagia, plasma cell infiltration and infrequent thrombi are reported.

Treatment.—There is no specific treatment of established value. Convalescent human serums and serums from horses inoculated with rickettsias have been tried without convincing results. A hyperimmune rabbit serum has been described, and early results in a small series of cases indicate that it may be of therapeutic value. Many of the newer therapeutic chemicals have been tried, with little evidence of any value and some evidence of harm.

Good nursing with every care to maintain the strength of the patient is of the greatest importance. Cardiac depressants should be avoided. For the relief of the headache, acetylsalicylic acid may suffice; otherwise codeine or morphine may be necessary. Digitalis may be given with possible benefit to patients showing signs of cardiac failure. Constipation is best controlled by means of enemas or with mild laxatives. Care should be exercised to prevent bed sores. The patients, particularly those in the older age groups, should be confined to bed until convalescence is well established.

Prevention.—The prevention of epidemic typhus rests on the control of lice. All patients and their contacts must be completely freed of lice, and all persons coming from typhus-infected areas should be treated as contacts. The body louse nests in the clothing and usually remains there when the clothes are removed. Clothing may be disinfected by several methods using heat or pediculicide powders¹ and chemicals. The louse infested person should be bathed and the hair of the head and the body clipped. Those in attendance on patients (e. g. doctors, nurses and orderlies) should be provided with louse proof clothing made of white material and fashioned as coveralls with the openings at the wrist, ankle and neck closely fitted. Stockings should be drawn up over the bottoms of the coveralls and rubber gloves pulled over the wrists. Care should be taken in the examination of patients since there is some evidence that inhalation of the dried excreta of infected lice may be responsible for some secondary infections.

Vaccines of various types have been prepared for immunization against typhus. Attenuation of the living rickettsias by heat or by addition of such substances as bile, as well as partial neutralization by convalescent serum, has been used. However, the dangers inherent in the use of a vaccine containing living rickettsias as shown by the fact that attacks of the disease have been produced by inoculation with such vaccines should prohibit their use. Several preparations have been made which utilize rickettsias killed usually by solution of formaldehyde or phenol. One of them, that of Weigl, apparently gives good immunity, but unfortunately it cannot be produced on any very large scale, as its production requires that a suspension of rickettsias be injected into the rectums of lice, that the lice be subsequently fed on typhus immune persons and that the louse intestine be then removed and prepared as a treated suspension, which is used as the vaccine. Approximately one to two hundred lice are needed for the vaccination of a single person. A second source of rickettsias for the preparation of vaccine of killed organisms is the yolk sac of the developing chick embryo after its inoculation with typhus rickettsias. Vaccines made from killed rickettsias secured from the lungs of intranasally infected mice, rats or rabbits have also been prepared.

1. Evidence is accumulating that body lice can be controlled by the use of pediculicide powder alone.

The vaccines of killed rickettsias at present in use give good results when tested in animals, but no adequate field tests in the presence of epidemic typhus have as yet been made. Typhus has occurred in a number of laboratory workers who had previously received such vaccines and apparently was modified in severity, most of these workers showing very mild symptoms of only a few days duration. The length of time for which a vaccine may be expected to give its full protection is not known, but evidence at hand indicates that after the initial series of three injections a "booster" dose should be given every few months when the danger of typhus is present.

ENDEMIC TYPHUS

The difference between the epidemic form of typhus and the endemic or murine type is largely epidemiologic, with some variations, not entirely explained, in the immunologic observations and in the reactions produced by the infection in laboratory animals.

The causative organism of endemic typhus has been named *Rickettsia mooseri*, and the disease is also referred to as murine typhus and as Brill's disease.

History and Distribution.—Mild typhus was first reported in the United States in New York in 1898. In the next few years it was reported in additional communities—Atlanta, Ga., 1913; Charlotte, N. C., 1914; Galveston, Texas, 1916; Alabama, 1923, and others. The epidemiologic features indicated common rats as a reservoir, and typhus infected rat fleas and infected rats have been found many times in nature in foci where the disease was occurring in man.

In 1929 the human cases of endemic or murine typhus were practically limited to the towns, particularly those along the southern Atlantic coast from Baltimore south and continuing along the Gulf coast and up the Rio Grande River as far as El Paso, Texas, with a few cases in southern California. Towns in the interior of the Southern states were likewise affected but to a lesser extent as the distance from the seaboards increased. As late as 1932 the northern limit of the disease in Alabama was about in a line with Montgomery. Since 1932 cases have appeared farther north until at present the known northern limit of the disease has reached central Tennessee, with additional foci in Cleveland and Cincinnati and in Washington, D. C.

Since the identification of this form of typhus in the United States it has been found to be widespread over the world, especially along the sea coasts. It is probable that endemic typhus occurs at the inception of and during louse borne epidemics but is not recognized as such.

Transmission.—There is a reservoir of the infection in nature in the common rat and possibly in other rodents. Evidence indicates that the rickettsias are transmitted from rat to rat by rat fleas and rat lice. They have not been demonstrated in the salivary glands of the flea, and experiments to determine the transmission of this form of typhus by the bite of the flea alone have been unsuccessful. Transmission to man most probably occurs through the medium of the infected feces of rat fleas.

Epidemiology.—The chief epidemiologic characteristics of endemic typhus are as follows:

1. Human cases are associated with rat harbors.
2. The disease occurs most commonly among workers in food handling establishments.

3. There is no predominance of cases among the poorer sections of the population.

4. Transmission from person to person through contact or by rat fleas has not been observed.

5. The peak of prevalence is in late summer and fall.

Clinical Features.—The clinical features of the endemic form of typhus are identical with those of the epidemic form described earlier with the exception that in the average case they are much less severe than those in the majority of cases of epidemic typhus. The rash in endemic typhus does not often appear before the fifth day and may comprise only a few macules which may disappear in a day or so. The general symptoms are on the average much milder. The case fatality rate is below 5 per cent, with most of the deaths occurring in patients over 45 years of age.

The fact that the case fatality rate is much lower in murine typhus than in epidemic typhus has usually been considered to be due to a difference in the virulence of the flea borne as compared with the louse borne strains. It should be noted, however, that murine typhus occurs among populations in which the element of human distress is lacking, in contrast to the great epidemics of louse borne typhus which appear among the most miserable populations in time of war, economic depression, starvation, overcrowding and lack of heat. Murine typhus occurring under such conditions might possibly be a more severe disease. This question, together with that of the interrelationship of the two types of disease, remains to be answered.

The laboratory findings are similar to those noted for epidemic typhus except that leukopenia is more common. The Weil-Felix reaction is also positive in high titers.

When typhus is present as an epidemic, little difficulty should be experienced in making the diagnosis. Sporadic cases whether of the epidemic or of the endemic form of the disease give more difficulty. This is true particularly in those sections where cases of Rocky Mountain spotted fever or of tsutsugamushi may be encountered also. It is practically impossible to make a differential diagnosis prior to the appearance of the rash. Other diseases with which typhus has at times been confused are measles, meningococcemia and typhoid. Drug rashes also may be confusing.

Prevention.—The control of endemic typhus from present knowledge should be based on control of the rat population—by trapping, poisoning and rat proofing. The last of these measures is the only one that may be considered as of permanent value. Trapping and poisoning must be continuous to be of any practical value and must be supplemented with an attack on the rat's home and his sources of food by rat proof construction.

Vaccines are prepared against endemic typhus by the technics employed in the production of those for epidemic typhus. They have been shown to have good protective value in animals but have not been tested adequately in human beings.

ROCKY MOUNTAIN SPOTTED FEVER

The causative agent is *Rickettsia rickettsii* (*Derma-centroxenus rickettsii*).

History and Distribution.—As the name implies, Rocky Mountain spotted fever was first recognized in the Rocky Mountain section of the United States,

where it has been extensively studied since 1902. Until 1930 the disease was thought to be confined to eleven states of the Northwest although a case in Indiana had been reported in the literature and the diagnosis of spotted fever had been considered on occasion in other states prior to 1930. A recent review of clinical records shows that the disease was present in certain sections of the East at least as early as 1912. During the spring and early summer of 1930 the disease was clinically identified and the virus isolated in suspected cases occurring in the Eastern states. Since the time of definite identification of the disease in states outside the originally known area, new states or countries have been added to the known regions of distribution each year. At present study of suspected cases has shown that the area of distribution includes forty-one states. Five of the New England states—Maine, New Hampshire, Vermont, Connecticut and Rhode Island—have not as yet reported confirmed cases known to have originated in those states. In the Middle West, cases have not been identified in Wisconsin and Michigan. The number of cases reported each year in the United States has remained fairly constant: 560 in 1939, 457 in 1940, 516 in 1941. Rocky Mountain spotted fever is present in two provinces of western Canada and in two states of Brazil. In the latter country the disease has been named exanthematic typhus of São Paulo. It has been identified in Colombia, where it was originally described as Tobia fever.

Transmission.—Several species of ticks are known to be capable of transmitting Rocky Mountain spotted fever. *Amblyomma cajennense*, *Dermacentor parumapterus marginatus*, *Dermacentor occidentalis*, *Rhipicephalus sanguineus* and *Dermacentor albipictus* have been shown to be efficient transmitting agents under experimental conditions. However, the dog tick (*Dermacentor variabilis*), its near relative the wood tick of the Northwest (*Dermacentor andersoni*) and *Amblyomma americanum* are the only species biting man in which the virus of the disease has been found naturally present in the United States. *Amblyomma cajennense* is the common vector in Brazil. The rabbit tick (*Haemaphysalis leporis palustris*) has been found naturally infected, but this species does not bite man; it may, however, play an important part in preserving and spreading the virus in nature. There is no evidence at present to indicate that any arthropod other than the tick transmits the disease.

Clinical Features.—In many of its general aspects this disease resembles typhus, the chief differential points being the duration of fever and the time of appearance and the location of the rash.

In man the disease has an incubation period of two to twelve days, being most often a week or a little less. As in typhus, the actual onset may be preceded by a few days of ill defined prodromes—loss of appetite, listlessness and headache. The onset is usually sudden, with a chill or chilly sensations and rapidly rising fever. Prostration is usually pronounced. In the more severe type of the disease nosebleed may occur early. Soreness of the muscles and the joints is commonly present. The temperature rises rapidly, reaching its highest point usually in the second week. Morning remissions of 1 to 3 degrees F. occur. The termination of fever is by rapid lysis occurring usually about the twenty-first day, although patients with mild disease may be afebrile before the end of the second week.

The most distinguishing characteristic of the disease is the rash. This appears between the second and fifth days, usually on the third or the fourth. The typical rash may be preceded by a suggestive mottling of the skin, and this may easily be confused with the early rash of measles. The early rash usually disappears in a few hours to be followed by the typical maculopapular lesions. The lesions are rose red at first and become fainter, almost disappearing during the morning remissions of fever early in the disease. They become more distinct each day until they are definitely petechial in all but the mildest forms of infection. In severe involvement the spots become deep red or purplish and confluent. Necroses may develop. The rash usually persists throughout the febrile period and into convalescence, becoming brownish. Often a branny desquamation occurs over the areas where the rash was thickest. The site of first appearance and the spread and final distribution of the rash are important in the diagnosis of the disease. Usually the rash appears first on the wrists and the ankles, spreading rapidly in the first twenty-four to forty-eight hours to the back, then to the arms, the legs and the chest, and last to the abdomen, where it is least pronounced. The palms and the soles are frequently involved, often the face and occasionally even the scalp.

Nervous and mental symptoms are common: restlessness, insomnia, disorientation and in severe cases delirium. In fatal cases coma usually precedes death, which occurs about the end of the second week.

Convalescence of patients with severe involvement is apt to be slow and may be complicated by visual disturbances, deafness or mental confusion. Although recovery may be delayed, it is usually complete in the end. The case fatality rate, as in typhus, varies directly with age. The crude rate for reported cases in the United States is 18.4 per cent.

Laboratory Findings.—The white cell count is increased in cases of Rocky Mountain spotted fever, usually being about 12,000, although it may be as high as 30,000, which is in contrast to the count suggesting moderate leukopenia or the normal one usually seen in cases of typhus.

The Weil-Felix reaction gives no aid in differentiating spotted fever from typhus. In a large number of cases it has been noted that agglutinins for *B. proteus* OX₂ occur more frequently in the serums of patients with spotted fever than in those of patients with typhus, but since they do occur in some of the latter the stated difference is of no help in the individual case. When agglutinins for both strains are present, those for OX₁₀ are usually higher than those for OX₂. The agglutinins for OX₁₀ usually appear toward the end of the second week of the disease. At times they are delayed until early convalescence. In some proved cases of spotted fever no agglutinins for *B. proteus* X were produced. The curve of agglutinins in its rise and fall is similar to that seen in typhus. As in typhus, it has been found that complement fixation with the rickettsias of spotted fever used as an antigen becomes positive in the second week of illness.

Pathology.—Histologic changes in the brains of infected guinea pigs do not vary appreciably from those already described for typhus as far as the character of the individual lesions is concerned. It has been shown, however, that a higher proportion of the focal lesions

is found in the midbrain, pons, medulla and cerebellum in spotted fever than in typhus.

Treatment.—As with the other rickettsial diseases, there is no specific treatment of proved value. Injections of serum from convalescent patients have been tried repeatedly, as have transfusions from immune donors, but without definite benefit. A hyperimmune rabbit serum has recently been developed which has definite therapeutic value in the treatment of animals that are ill with spotted fever. A small series of patients has been treated with this serum with results indicating that this means of treatment will effect a reduction of the case fatality rate if the serum is administered before the third day of the rash. A definite opinion of its value should be withheld until additional observations have been reported. The newer chemicals—metaphen, sulfanilamide and sulfapyridine—have been tried clinically without definite evidence of benefit to the patient. The experimental use of sulfanilamide and sulfapyridine in the treatment of spotted fever in guinea pigs increases both the severity of the infection and the death rate.

Good nursing care, avoidance of exertion, mental or physical, maintenance of the fluid intake, by mouth preferably, by rectal drip or hypodermoclysis if necessary, and relief of the headache with acetylsalicylic acid, codeine or morphine give the best results. The mind of the physician may be relieved by the knowledge that there is more danger from overtreatment of these patients than from undertreatment.

In fatal cases death usually occurs before the fifteenth day, commonly between the eighth and the twelfth day. If the patient is going to recover, some indication of this may often be found in a slight decrease of the temperature about the fourteenth or fifteenth day which becomes more definite with each succeeding day. Final defervescence occurs by rapid lysis which often brings the temperature to normal about the end of the third week. The temperature may rise above normal in the afternoons for a few days longer. If no complications are present, a slow but steady improvement may be expected. After severe infections convalescence may be prolonged for many months, and remnants of the rash may be present for several months or even years.

Prevention.—Methods for the control of spotted fever have been directed toward the eradication of ticks but have not been very successful. The difficulties of the problem may be recognized when the variety of hosts on which these parasites feed is considered. Poisoning of rodents, dipping of domestic stock, clearing away of brush and burning over of tick infested areas probably assist in the reduction of ticks, but it is only fair to state that, although such methods have been tried, there is little evidence that much has been accomplished in the way of limiting the disease. Tick repellent powders have been tried, but the practical value of those in use is limited.

Probably the most effective method of prevention is the exercise of personal care. Known infected areas should be avoided as far as possible during the tick season. Those who must visit such areas should frequently examine clothing and body for ticks. Usually the tick does not become attached to its host at once but crawls around for several hours. It has been shown also that the chance of receiving infection from the bite of an infected tick is directly proportional to

the length of time the tick has fed. Care should be taken in handling the tick when removing it from the person or from a pet. It is best to remove ticks with small forceps or with a piece of paper held in the fingers. The hands should be washed thoroughly with soap and water after handling ticks. Pets should be thoroughly deticked every few days during the tick season. There is little danger of leaving the mouth parts of the tick in the wound. The wound itself may be treated as any other abrasion, since there is nothing to distinguish the bite of an infected tick from that of a noninfected tick, nor is there any evidence that such measures as cauterization will lessen the chances of subsequent development of the disease.

A vaccine made from infected ticks for use against spotted fever was elaborated and is prepared by the United States Public Health Service at Hamilton, Mont. A second method of preparing vaccine is now in use. This method utilizes the rickettsias grown in the yolk sac of the developing chick embryo. Evidence from animal experiments indicates that the yolk sac and tick vaccines are of comparable value in prevention. Occasionally typhus occurs among those who have been vaccinated but is usually mild. The evidence as to total prevention is hard to evaluate but seems to indicate that vaccination appreciably lessens the chance of subsequent infection. There is no good evidence that the vaccine is of value after the infection has been acquired, nor is it of any value in treatment.

BOUTONNEUSE

Synonyms:—Marseilles fever; fièvre exanthématique; escarro-nodulaire.

Boutonneuse is caused by *Rickettsia conori* and is closely related to Rocky Mountain spotted fever. It has an extensive distribution in Rumania, Portugal and the countries bordering the Mediterranean. Results of investigations indicate that the so-called Kenya typhus in East Africa and South African tick fever may be closely related to boutonneuse, the former probably being identical with boutonneuse.

Transmission.—The infection is transmitted by the brown dog tick *Rhipicephalus sanguineus*. As in some other rickettsial diseases, a reservoir probably exists in nature in the lower animals. The dog apparently is an important reservoir of boutonneuse. The tick *R. sanguineus* is also capable of harboring and transmitting the rickettsias of Rocky Mountain spotted fever.

Clinical Features.—The incubation period is five to seven days, although in occasional cases it may be as long as eighteen days.

As in other rickettsial infections, the onset is usually abrupt, with fever and repeated chills or chilliness. The temperature rises rapidly and may reach 104° F. in a few hours. Headache and pain in the muscles and the joints are common complaints. Prostration is usually not a prominent feature of this disease. The febrile period is from eight to fourteen days, defervescence taking place by rapid lysis.

Insomnia is common throughout the febrile period. As the disease is seen in Marseilles and Italy, mental disturbance is less severe than in other rickettsial infections, although patients with severe involvement may show moderate delirium. The case fatality rate is low, being less than 3 per cent.

A papular or maculopapular rash appears on the second to fourth day of illness. It begins on the trunk,

legs and arms and extends rapidly over the entire body, usually appearing on the face last. The palms and the soles are commonly involved. The rash may be less pronounced on the abdomen than elsewhere. It may be found on the soft palate as small round red spots which persist only a few days.

The individual lesions comprising the rash may become hemorrhagic, especially those on the legs, but there is little tendency to coalescence. The rash usually disappears with convalescence.

Frequently a small ulcer about 2 to 5 mm. in diameter, showing a black necrotic center surrounded by a red areola, is found at the onset of illness. This has been named *tache noire* (black spot) and is similar in appearance to the ulcer often seen in *tsutsugamushi*. The *tache noire* may be found on any part of the body, usually on a part covered by clothing; this is supposed to be the site of the infecting tick bite. Sometimes the regional lymph nodes become enlarged and tender.

The Weil-Felix reaction with the OX₁₀ strain of *B. proteus* used as an antigen becomes positive late in the disease.

Treatment and Prevention.—There is no specific treatment for *boutonneuse*, and no vaccine is available at present.

The prevention lies largely in the measures advised for the prevention of Rocky Mountain spotted fever.

TSUTSUGAMUSHI

Synonyms.—Japanese river fever; kedani fever; Japanese flood fever; scrub typhus.

Tsutsugamushi is an acute febrile disease clinically resembling the other rickettsial infections. The causative organism is *Rickettsia nipponica* (*Rickettsia orientalis*, *Rickettsia tsutsugamushi*). The disease has long been recognized as prevailing in Japan along the course of rivers and has shown a tendency to increase at the time of flood conditions. Originally thought to be confined to Japan, it has been shown to be probably identical with the so-called scrub typhus of Malaya, the mite borne coastal fever of Queensland in Australia and the pseudotyphus of Sumatra. It is also present in the Philippines and probably has a fairly wide distribution throughout the other islands of the southwest Pacific.

Transmission.—*Tsutsugamushi* is transmitted to man from a reservoir probably in field mice and other rodents by the larval form of the mite *Trombicula akamushi* or *kedani* mite. In Malaya and Sumatra the transmitting mite is named *Trombicula deliensis*. The larvae of this mite do not ordinarily feed a second time, and the adults do not feed on animals. The infection contracted by larvae through feeding on infected rodents is apparently transmitted through subsequent stages of the life cycle to the larvae of the next generation.

Epidemiology.—In Japan the disease is more prevalent during the summer months, while in Malaya there is little seasonal variation. There is a greater incidence of the disease among males than among females, a fact that is explained by the occupational exposure of males in rural occupations.

Clinical Features.—The incubation period in a small series of cases was determined as seven to twenty-one days, the common period being a little less than two weeks. As in the other rickettsial diseases, prodromal

symptoms such as headache, malaise and loss of appetite may precede the onset. At the onset chills or chilliness, headache and fever occur. Deafness is not an uncommon early symptom and may persist throughout the disease. There may be pain in the joints and in the chest. Drowsiness or some other evidence of mental disturbance is often present. The fever is continuous in type with morning remissions of 1 to 3 degrees (F.). Prostration is often noted throughout the illness. In patients who are recovering the temperature usually falls to normal about the fourteenth to sixteenth day. This may be followed by a slight rise in temperature on the succeeding day or days to be followed by complete recovery. The case fatality rate for all ages is about 15 per cent. A definite increase of the rate occurs with increase of age.

The most characteristic sign consists of a small necrotic ulcer supposedly at the site of the infecting mite bite. This ulcer is 2 to 5 mm. in diameter with a black necrotic center surrounded by a red areola. Apparently it is found in the great majority of cases of *tsutsugamushi* as observed in Japan. In the disease as it occurs under the name of scrub typhus in Malaya the initial ulcer is not always present. There is general lymphadenopathy, which is especially noticeable in glands draining the site of the primary ulcer, which is usually found in the pubic region, in the axilla or on the legs.

The characteristic rash of *tsutsugamushi* appears from the fourth to the eighth day after onset and consists of macules and slightly elevated rose red or pink papules; it does not become petechial. This rash appears first on the trunk and the face and extends to the legs and the arms. It may be present on the palms and the soles, and occasionally the face and the scalp are involved. The rash reaches its height in about four days and fades within six or seven days. An enanthem may be present on the soft palate.

Many of the patients show bronchial symptoms with a dry cough; in occasional ones a mucopurulent sputum develops and pneumonia may occur as a complication.

Hyperesthesia, pains in the muscles and the joints, deafness, clouded mentality, insomnia and delirium may be encountered. A certain degree of immunity is conferred by an attack, but in some cases this lacks permanence.

The Weil-Felix reaction with the OXK strain of *B. proteus* used as an antigen is usually positive after the tenth day in dilutions of 1:160 and above, but not that with the OX₁₀ or that with the OX₂ strain. The waxing and waning of the patient's agglutinins against the OXK strain of *B. proteus* is similar to that seen in tests with strains OX₁₀ and OX₂ in cases of typhus, the peak titer being reached about the time convalescence is established. In some cases the Weil-Felix reaction may remain persistently negative. As in other rickettsial infections, it is advisable to examine one sample of serum when the disease is first suspected and a second sample near the termination of illness.

Pathology.—Microscopic examination of the brain shows the presence of lesions similar to those found in Rocky Mountain spotted fever and typhus.

Treatment.—There is no specific treatment for *tsutsugamushi*. Drugs may be used, especially to relieve headache and insomnia. As in other rickettsial diseases, cardiac depressants should be avoided. The

primary ulcer may be treated like any other similar lesion of the skin as there is no evidence that local treatment of the ulcer will influence the course of the disease once it has developed.

Prevention.—The wearing of mite proof clothing has been recommended by the Japanese for those working in mite infested regions. Since many of these areas lie in the tropics it is doubtful that this recommendation is of much practical value. Repellent powders, shown to be of value against lice, may be tried. Frequent baths may be of some value in removing mites prior to attachment for feeding. When possible the bed should be made on some structure which will remove the bedding from contact with the ground.

No vaccine has been developed against tsutsugamushi. Since there is no cross immunity between this and the other subdivisions of the rickettsial diseases, it is not to be expected that vaccines against typhus and spotted fever will be of any value against tsutsugamushi.

Q FEVER

Present knowledge of Q fever began in 1937, when human cases of this new disease entity were described in Australia and shown to be caused by an organism to which the name *Rickettsia burneti* was given. At about the same time a strain of rickettsias was isolated from ticks in Montana and named *Rickettsia diaporica*. Later work showed that these two infectious agents are identical. *R. burneti* has been isolated from ticks and from bandicoots in Australia. The rickettsia of Q fever differs from the other known pathogenic strains of rickettsias in being readily filtrable through ordinary bacterial filters. Agglutinins for the X strains of *B. proteus* do not develop in the serum of patients with this disease.

Q fever may appear in two clinical forms, one presumably transmitted by the tick and the other probably air borne from infected animals or possibly from the dried feces of infected ticks. This second form of the disease has been recognized only in accidentally infected laboratory workers.

The Australian cases have been in general confined to workers in abattoirs, to foresters and to dairy workers.

Clinically the cases reported in Australia are characterized by a fairly acute onset with chills, prostration and fever. No rash appears. Headache is pronounced in the majority of cases; sweats at night and insomnia are common. The fever is continuous in type, lasting from a few days to two to three weeks. The pulse is slow in comparison with the height of the temperature, and the white blood cells remain within normal limits. Neither symptoms nor thoracic findings in the Australian cases have suggested any important pulmonary involvement.

The disease in the laboratory workers accidentally infected, referred to in a foregoing paragraph, belonged clinically in the atypical or virus pneumonia group. In these patients two types of onset predominated, one coryza-like, the other with headache, chilly sensations and general malaise. Following the onset there was a latent period of about three days in which the patient continued to work while feeling ill. One laboratory worker had a dramatic onset with abdominal cramps, chills, fever and headache while at work.

Severe and persistent headache was an outstanding symptom developing during the latent period. Other

complaints on admission to the hospital were chills, fever, sweats and generalized body aches and pains. A few of the patients had experienced some nausea and vomiting earlier. A short hacking cough developed in several of the patients. In only a few was this cough productive, with a small amount of thick tenacious white mucus. In none of the cases was there observed a "prune juice," "rusty" or blood tinged sputum. In approximately half of the cases vague pains developed in the substernal region or on the side of the demonstrated pulmonary lesion. The pain in the chest had more the character of neuralgia than of pleurisy, as it was not associated with respiration. All the patients complained of insomnia.

Roentgen examination of the chest gave the most typical and consistent evidence of pulmonary lesions. Soft, infiltrative lesions, single or multiple, were visible on the films but were not of the uniform density seen in lobar pneumonia, these lesions appearing to be more of the patchy type observed in bronchopneumonia. The roentgenologist reported the films as revealing early pneumonia or pneumonitis.

Physical signs of pulmonary involvement were minimal. A slight dullness to the percussion note, a slight increase in breath sounds of a bronchovesicular character and an occasional moist rale over the involved area were the most that usually could be elicited. It is doubtful if without roentgen examination many of these patients would have been seriously considered to have had a pneumonic process.

Although the disease in these cases closely followed the picture presented by the so-called atypical pneumonias, efforts to isolate *R. burneti* from other atypical pneumonias has so far resulted in failure.

Treatment is symptomatic.

The case fatality rate in both forms of Q fever is practically zero. The disability lasts from ten days to three or four weeks.

TRENCH FEVER

Trench fever, also known as five day fever and Wolhynian fever, is a febrile disease transmitted to man by the body louse. Extracellular rickettsias have been found in lice fed on patients with the disease and are present in the feces of such lice. Trench fever disappeared after World War I and opportunity was not present for intensive study until its recurrence with the present war. As a result its true relationship to the other rickettsial infections is not yet known.

The incubation period varies from five to twenty days. The onset is sudden with headache and pain in the legs, most noticeable in the shins. There is a sharp rise in the temperature which may endure for about five days to one week, to be followed by a normal temperature. Relapses are frequent, three or four recurrent bouts of fever being common.

A rash is present in the majority of cases, being usually macular, with occasional cases showing papules. This rash may occur as early as the second day of the initial attack of fever or during one of the relapses. It is most commonly observed on the trunk and may disappear in twenty-four hours.

There is no report of agglutination of any of the X strains of *B. proteus* by serums from patients.

The death rate is nil.

There is no specific treatment for this disease and no vaccine. Prevention, as in epidemic typhus, consists in the eradication of body lice.

THE ACUTE DIARRHEAL DISEASES

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Historically the diarrheal diseases have been a plague of armies, a major hazard to the life and health of infants and a common cause of illness among institutional inmates. The expanded sphere of our nation's activity now includes areas where these disorders still remain in their historical place of importance. Thus American physicians and health authorities face the acute diarrheal diseases not as a fast disappearing group of disorders but as a major current medical problem.

During the past six years the National Institute of Health has maintained a field laboratory for the investigation of these diseases. Studies have been conducted in four widely differing areas selected as representative of those with very high, high, medium and low mortality from diarrheal diseases (Puerto Rico, New Mexico, Georgia and New York City). As a part of this work we studied 1,499 cases occurring in the general population, obtained satisfactory clinical data on 1,247 of these and recorded epidemiologic histories on 830 households. A total of 8,643 survey fecal cultures were obtained on representative persons. Institutional inmates, among whom clinical disease and subclinical infection were relatively common, have been studied extensively, and some observations were obtained on military groups in which diarrheal disease was troublesome. New, highly selective culture mediums were used which increased the reliability of bacteriologic findings.

ETIOLOGY

A clinical and etiologic classification of the diarrheal diseases is given in table 1. Primary infectious diarrhea is caused by pathogens which establish themselves and grow in the enteric tract. Various organisms are known to be responsible, and others are held under suspicion. In parenteral and secondary diarrhea the gastrointestinal disturbance is but one part of a symptom complex. The genesis of the diarrhea that frequently occurs in acute infectious diseases, in paranasal sinusitis and in some other localized infections is not clearly known.

Acute noninfectious diarrhea is commonly caused by the ingestion of toxic or irritating substances. The offending material is usually food in which staphylococci or other organisms have grown. Water heavily polluted with bacterial decomposition products or industrial wastes is involved less frequently. Allergic and neuropsychiatric disorders as well as nutritional deficiencies may cause episodes of diarrhea, usually chronic in form. The popularly incriminated "dietary indiscretion" is blamed rightly in some cases. Various chemical compounds, including cathartics, also may give a noninfectious diarrhea.

A classification of "cause unknown" has weight only following adequate study by competent observers. Some cases may be differentiated as instances of infectious or of noninfectious diarrhea through their clinical and epidemiologic characteristics.

Having in mind the causes of diarrhea, the first problem in an etiologic study is to determine the relative importance of each. In this report we limit attention to the acute diarrheal diseases. Cholera with its distinctive clinical features and limited geographic distribution will not be considered.

The proportion of patients with endemic diarrheal disease whose stools were found culturally positive for *Shigella* in our study is given in table 2. The findings in New Mexico and Georgia were similar, and the data from these states are shown combined. The stools of the patients were examined culturally at least once during the acute phase of the disease. The fecal specimens from 76 per cent of those with severe and 58 per cent of those with milder disease were culturally positive for *Shigella*. There was an increase in the proportion of those with positive fecal cultures as the number of examinations during illness increased—from 62 per cent of those with severe disease who had one examination to 90 per cent of those with more than three examinations. The stools of a few of the New York City patients were examined late in the illness, but all the patients are included. The proportion whose disease was found due to *Shigella* was less than in New Mexico and Georgia.

The percentage with positive findings was lowest for the group whose ages were under 6 months, but the percentage varied widely with area and with severity of illness. In New Mexico and Georgia 63 per cent of the infants under 6 months with severe diarrheal disease had cultures positive for *Shigella*; 33 per cent of those with mild intestinal disorder had positive cultures. In New York only 7 per cent of the 57 patients under 6 months were found to have positive cultures. Corresponding variations, though less pronounced, are apparent in the groups with ages from 6 to 12 months and at one year. In older age groups the percentage with positive findings was high in all three areas.

The cultural findings for institutional inmates were of a similar nature. At a hospital for patients with mental diseases in Puerto Rico, for example, 149 (75 per cent) of a total of 198 patients reported as having diarrhea were found to have fecal cultures positive for *Shigella*.

Each clinical case of acute diarrhea observed in New Mexico during the first two years of our study was examined by an experienced protozoologist (the late Bertha Kaplan Spector), but in spite of a carrier rate of 19.4 per cent a diagnosis of amebic dysentery was confirmed in only 1 case, whereas the common occurrence of bacillary dysentery was readily established.

Salmonella was rarely isolated from persons with endemic disease.¹ This is in sharp contrast to observations reported from South America.² Workers in Montevideo, Uruguay, studied bacteriologically 395 infants and children hospitalized for "enteritis." They isolated *Salmonella* from 126 (32 per cent) and *Shigella* from 80 (20 per cent).

Various strains of paracolon bacilli, of *Pseudomonas* (e. g. *Bacillus pyocyaneus*) and of *Proteus* were isolated from patients whose stools were otherwise culturally negative. They were also found in the stools of healthy persons. Our data did not establish or

1. In a study now in progress in New Orleans these organisms have been isolated from more than 10 per cent of the children hospitalized for diarrheal disorders.

2. Bonaba, J.; Carrau, A.; Hormaeche, E., and Zubino, V.: Estudios sobre la etiología infecciosa de las diarreas infantiles, Montevideo, Editorial Médica, J. García Morales, 1940.

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disprove the etiologic role of these organisms. Parasitologic examinations were obtained in the New Mexico cases. Intestinal parasites did not appear to be responsible for any of these.

Parenteral infection was of minor importance as a cause of acute diarrhea in New Mexico, Georgia and Puerto Rico; it was believed responsible in a relatively high proportion of the cases in which the stools were culturally negative in New York.

groups and 10 among the inmates of hospitals for patients with mental diseases) were nonexplosive in character. All these were found due to some variety of *S. paradysenteriae*. There were 9 explosive epidemics. One of these was due to *Shigella* and another to *Salmonella typhi* murium. In 7 the stools of all persons examined were culturally negative for these organisms and the outbreaks had the clinical and epidemiologic features of "food poisoning."

TABLE 1.—A Clinical and Etiologic Classification of Diarrheal Diseases

Group	Clinical Entities	Usual Course	Severity	Etiologic Agent
Primary infectious diarrhea	Bacillary dysentery	Acute	Mild to very severe	<i>Shigella dysenteriae</i> and <i>Shigella paradysenteriae</i> , varieties Shiga, Flexner, Sonne, Newcastle (Boyds 88) and Schmitz
	Amebic dysentery	Acute to chronic	Severe	<i>Entamoeba histolytica</i>
	"Food infection"	Very acute	Severe	<i>Salmonella</i> , chiefly <i>S. typhi</i> murium and <i>S. enteritidis</i>
	Cholera	Very acute	Very severe	<i>Cholera vibrio</i>
	Other bacterial infections	Variable	Mild	Slow lactose fermenting paracolon bacilli and pseudomonads are under suspicion
Parenteral and secondary diarrhea	Parasitic diseases	Variable	Variable	Various helminths and flagellates
	Parenteral diarrhea	Acute	Moderate to severe	Chiefly streptococci, also staphylococci and pneumococci, possibly viruses
	Tuberculous enteritis	Chronic	Severe	Tubercle bacilli
	Generalized infections	Variable	Variable	Variable
Noninfectious diarrhea	"Food poisoning"	Acute	Moderate to severe	Toxin producing staphylococci and possibly other organisms
	"Sewage poisoning"	Acute	Mild to moderate	Products of bacterial decomposition
	Nutritional diarrhea	Subacute	Mild	Dietary deficiency and "insults" to gastrointestinal tract
	Allergic diseases	Acute to chronic	Variable	Variable
	Neuro-psychiatric disorders	Chronic	Variable	Variable
	Other	Chronic	Severe	Local ulcerative or obstructive lesions such as those due to neoplasm and lymphogranuloma venereum
Diarrhea of unknown cause	"Epidemic diarrhea of newborn" *	Acute	Severe	Unknown

* Illustrative of various entities of unknown cause.

TABLE 2.—The Cultural Findings for *Shigella Paradysenteriae* in Endemic Diarrheal Disorders

Age Group	Cases in New Mexico and Georgia *						Cases in New York City †		
	Severe Disease			Milder Disease			Positive		
	Number in Which Fecal Cultures Were Made	Positive		Number in Which Fecal Cultures Were Made	Positive		Number in Which Fecal Cultures Were Made	Positive	
		Number	Per Cent		Number	Per Cent		Number	Per Cent
Under 6 months.....	41	26	63	27	9	33	57	4	7
6-12 months.....	45	31	69	44	23	52	21	4	19
1 year.....	55	43	78	56	37	66	27	9	33
2-4 years.....	30	28	93	61	42	69	38	26	68
5-14 years.....	9	9	100	22	15	68	37	28	76
15-44 years.....	49	37	76	43	25	58	7	5	71
45 years and over.....	18	12	66	11	2	18	3	2	67
Unknown.....	2	2	100	4	2	50	1	0	0
Total.....	249	188	76	268	155	58	191	78	41

* In these cases the stools were first culturally examined during the acute phase of illness.
† In most of these cases fecal cultures were first made during the acute phase of illness.

The endemic disorders seen by us rarely had the character and the course of diarrheal disorders due to ingestion of toxic or irritating substances. Occasional household outbreaks could be classified as "food poisoning."

Our study of endemic diarrheal disease in Puerto Rico was limited. Such disease was frequently found due to *Shigella paradysenteriae*. It appeared that the morbidity and the mortality from this primary enteric infection were well above the rates in the other areas studied. However, there were various other etiologic factors involved, and the relative importance of each was not evident from our data.

We investigated 25 localized outbreaks of diarrheal disease. Sixteen (3 in military camps, 3 in civilian

The literature of the diarrheal diseases is notable for the variability in findings and conclusions. That *Shigella* infection of some type is the most important single cause has been supported by strong evidence. Flexner and Holt in 1903 were the first to present data leading to this conclusion.³ They reported on a study of acute diarrheal disease in 421 persons; 273 (66 per cent) had fecal cultures positive for the Shiga or the Flexner variety or both. These results obtained with early bacteriologic procedures at a cost of painstaking and tedious labor were not easily confirmed. In the subsequent study by others of more limited groups of patients, different factors (e. g. parenteral infection)

3. Flexner, Simon, and Holt, L. Emmett: Bacteriological and Clinical Studies of the Diarrheal Diseases of Infancy with Reference to B. Dysenteriae, Rockefeller Institute for Medical Research, 1903.

received attention and emphasis. The observations appear to have served as the basis for generalized opinion. There was an inadequate appreciation of what is now evident. The cause of diarrheal disease varies with area, with season and with age of persons concerned. Statements as to cause must be qualified and limited, not generalized.

EPIDEMIOLOGY

We present here our findings for *Shigella paradyseriae* infections and refer only briefly to the epidemiology of other diarrheal diseases.

The rates of incidence are admittedly based on incomplete reports, but in 1937 the rate for culturally proved cases of bacillary dysentery in New Mexico was 2.0 cases per thousand of population, while in 1938, with improved reporting, it was 3.6. South Georgia and Manhattan were studied simultaneously in 1939-1940 and the respective rates for proved cases of bacillary dysentery were 1.7 and 0.04 respectively. It was clear that this infection varied in incidence and occurred more frequently than was usually thought.

symptoms was eleven days, and the average duration of the convalescent carrier state was thirty-four days. The latter terminated by the end of one month in about 50 per cent of the cases but continued for more than ten weeks in 10 per cent. The duration of the passive carrier state appeared to equal approximately the total duration of infection in cases (i. e. the duration of symptoms plus the convalescent carrier state). With rare exceptions all carrier states terminated in less than one year. Chronic carriers, if there are any, are exceedingly rare.

The frequency of occurrence and the distribution by age of the passive carrier state were revealed through culture of fecal specimens from representatives of the general population. A total of 8,643 survey examinations for *Shigella* was obtained. The persons tested were selected by random sampling. The total discovered prevalence of *Shigella* infection (i. e. clinical patients, convalescent carriers and passive carriers) was 11 per cent in New Mexico, 4 per cent in Puerto Rico, 3 per cent in Georgia and 0.1 per cent in New York City. A maximum rate of 20 per cent was found

TABLE 3—The Prevalence of *Shigella Paradyseriae* in Representatives of the General Population as Determined by Survey Fecal Cultures

Age Group	Number of Survey Cultures	Positive for <i>Shigella Paradyseriae</i>									
		Total		Patients with Diarrheal Disease *		Convalescent Carriers *		Passive Carriers *		Others †	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Under 1 year	416	21	5.0	8	1.9	8	1.9	2	0.5	3	0.7
1 year	193	18	9.3	5	2.6	7	3.6	6	3.1	0	0
2 years	232	19	8.1	4	1.7	8	3.4	7	3.0	0	0
3 years*	242	21	8.6	4	1.6	4	1.7	12	4.9	1	0.4
4 years	199	16	8.0	0	0	2	1.0	13	6.5	1	0.5
5-9 years..	1,153	94	8.1	1	0.1	13	1.1	73	6.3	2	0.2
10-14 years..	781	39	5.0	2	0.3	10	1.3	26	3.3	1	0.1
15-44 years	2,539	115	4.5	6	0.2	26	1.0	78	3.1	5	0.2
Over 45 years	910	32	3.5	1	0.1	10	1.1	18	2.0	1	0.1
Unknown	319	5	0.2	0	0	1	0.3	4	1.3	0	0
Total.	6,984 §	380	5.4	26	0.5	89	1.3	230	3.4	16	0.2

* This was the status on the day of examination

† These include incubatory carriers and person with positive fecal cultures whose status was uncertain

§ The data on New York City residents (1,630 cultures with 2 positive) are excluded

There was a definite concentration of culturally proved cases in the younger age groups in New Mexico and Georgia. The annual rate for infants under 2 years reached 30 per thousand in both areas. This rate declined through ages 2 to 4 years. Thereafter the morbidity was low, at the approximate level of 1 case per thousand of population a year. Most of the cases in New York City, in contrast, were distributed rather evenly throughout the first decade, with fewer cases in adolescents and adults.

Among the general population in New Mexico and Georgia the cases occurred chiefly during the summer and early fall. There was a pronounced concentration of cases among the poor. In household groups there were almost as many secondary infections as primary ones. Few young children in infected families remained free of disease. Furthermore, fecal specimens were collected from 219 of the household members who remained well, and 40 (18 per cent) were found to be passive carriers.

Convalescent carriers were identified in considerable numbers. A group of 103 patients whose fecal cultures had been positive were examined by serial cultures following recovery, and 82 (80 per cent) were found to be carriers. The average duration of infection with

in one village. A history concerning diarrhea was taken each time a specimen was secured. Thus we obtained cultural examinations and a record of the number of patients, convalescent carriers and passive carriers at that time. The findings are summarized in table 3. The total of *Shigella* infections was rather uniformly distributed by age. The highest rates were at ages 1 to 10 years. These were approximately twice those for the first year of life as well as those for the age groups above 10 years. Cases of disease, particularly those of severe disease which normally come to the attention of physicians, were definitely concentrated at younger ages. The passive carrier state was unusual at ages under 1 but increased in frequency with age. More than one half of the children found infected at 3 years and most of the infected older children and adults were passive carriers.

Of the 380 persons whose fecal cultures were positive, only 2 were under the care of a physician. One, acutely ill when found on survey, was admitted to the hospital the following day and died two days later. In the absence of a special study 2 might have been tested culturally, and thus there would have been 2 demonstrated and 378 undetected infections with *Shigella*. Hence for every known infection (manifest

source) there were numerous unrecognized infections (hidden sources). In the light of these findings it is not surprising that diarrheal diseases commonly appear as sporadic cases. These seemingly unrelated infections may arise from a single source or may be joined by a series of undetected infections. This knowledge is essential for the interpretation of the epidemiology of bacillary dysentery.

The relative frequency of carriers as compared with persons suffering from current diarrheal disease has been observed repeatedly in culturing fecal specimens from groups of institutional inmates. One example follows: An employee in a building which housed almost 200 low grade adult mental defectives had acute diarrhea which proved to be due to an infection with the W variety of the Flexner strain of *S. paradysenteriae*. No illness had been reported among the inmates, but fecal specimens from all were cultured. On one examination 26 were found to be carriers. This same variety of the Flexner strain was prevalent in inmates of another building who were younger; there were several clinical cases but even here the inmates with current disease were far outnumbered by the convalescent and passive carriers discovered by cultural surveys.

Some information relative to the immunologic response to *Shigella* infection was obtained through a study of institutional inmates. A preceding clinical infection provided a degree of protection against subsequent clinical attacks with the same variety of *Shigella* but little protection either against subclinical infection with the same variety or against clinical or subclinical infection with other varieties of *Shigella*.

Various modes of spread may be effective in the dissemination of these infections; the major question concerns their relative importance. We observed repeatedly a persisting high rate of infection localized in single buildings of institutions which had many buildings served by a common water and a common milk supply and a central kitchen. Flies were either well controlled or were absent because of the season of the year. Neither the water, milk or food nor the flies could be seriously suspected. This negative evidence indicated that the mode of spread was by a direct or an indirect person to person distribution of the infecting organisms.

In Albuquerque, N. M., some sections of the city were free of the disease while in others the infection was prevalent. All used the same water supply. Milk could not be the vector since the poor, who suffered most from dysentery, generally purchased the less expensive sterile canned or dried product. The Indians of the Southwest have a high incidence of diarrheal disease; they also use the sterile canned milk. We saw no evidence which suggested that the etiologic agents responsible for the diarrheal disease were brought into the households in water, milk or any other food product. The disease and the flies were found in the same environment. Still, cultural evidence suggested that flies do not carry *Shigella* frequently. We obtained only one positive result in repeated attempts to culture *Shigella* from pooled specimens of flies. In contrast pathogens of this genus were isolated with comparative ease from the fingers or from under the finger nails of culturally positive cases and carriers. On the basis of all evidence we are of the opinion that *Shigellas* are usually trans-

ported through the movements of infected persons (who are more numerous than has been supposed), chiefly those with few or no symptoms. Within the household and within larger groups living together the organisms are passed rather directly from person to person.

With respect to *Endamoeba histolytica* infection the high prevalence of cyst carriers has been reported repeatedly. However, clinical infection, acute or chronic, is comparatively rare. Both patients and carriers tend to be more numerous in tropical as compared with temperate and colder zones. In our experience apart from the Chicago outbreak cases were observed more frequently in institutions than elsewhere. In contrast to bacillary dysentery infection with *E. histolytica* was not often observed in infants; most of the subjects were adults.

The ameba carrier state is relatively chronic, its duration being measured in months rather than days and weeks as with bacillary dysentery. The cysts are moderately resistant and may be transmitted from person to person in a viable state through various channels. The wide distribution of *E. histolytica* is understandable. The unexplained observation is the striking variation in the reaction between host and parasite. In unusual instances the organism assumes the role of a highly invasive and destructive parasite; most commonly it is a seemingly innocuous organism. This striking difference in host-parasite relationship is the outstanding problem in the epidemiology of this condition, and indeed in the epidemiology of many diseases.

The *Salmonella* infections concerned in diarrheal diseases ordinarily come from animal rather than human sources. The organisms reach man through inadequately cooked meats and eggs, also in food soiled with the droppings of mice and rats. In outbreaks the cases occur within the one to seven day incubation period, though most have their onset on the second and the third day. Secondary cases may occur, but the convalescent carrier state is usually short and in general the infection soon disappears from the involved group.

Parenteral diarrhea is distinctive in its seasonal distribution, which coincides with that of acute infections of the respiratory tract. Outbreaks of staphylococcal food poisoning and "sewage poisoning" are highly explosive and ordinarily begin and terminate within a twenty-four hour period.

CLINICAL FINDINGS

In our studies of the acute diarrheal disorders in general population groups there were included 1,247 cases of diarrheal disease for which clinical as well as epidemiologic and laboratory data were collected. In assembling this series we attempted to secure records of all cases of diarrhea occurring within delimited areas. It is believed that the clinical findings on these cases more nearly represent the true picture of these disorders than the more commonly described observations on hospitalized patients.

One outstanding observation in the study of 555 patients whose stools were culturally positive for one or another variety of *Shigella* was the wide variation in severity of disease. There was a full range of clinical types from "just a few loose stools" at one extreme to fulminating, rapidly fatal illnesses at the

other. (In addition surveys of the general population revealed large numbers of asymptomatic carriers of *Shigella*.) Probably of equal importance was the observed fact that the commonest clinical manifestation was a "simple diarrhea." Abdominal pain, anorexia, nausea, vomiting and weakness were reported with frequency in the order named. Fever when present was usually an early manifestation, at times preceding and overshadowing the diarrhea, especially if the invading *Shigella* was of the Sonne or the Schmitz variety. Additional symptoms less frequently observed were tenesmus, dehydration, loss of weight, convulsions in children and chills in adults. Bloody "dysenteric" stools were seen rather infrequently even in cases of severe disease with positive fecal cultures.

The great majority of diarrheal disorders due to *Shigella* terminated spontaneously with clinical recovery within a week; those in adults usually in from two to four days. The illnesses in infants were more prolonged, and all 39 fatalities observed were in children under 2 years of age.

Amebic dysentery cannot be differentiated from bacillary infection on clinical grounds alone. In general, clinical amebiasis has a more gradual onset, slower evolution and a greater tendency toward chronicity of symptoms. With acute symptoms the stools are commonly "bloody."

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of endemic acute diarrheal diseases can be made with certainty only in the laboratory by isolation of the specific etiologic agents. Since this involves delay and since the specific chemotherapeutic agents now available for some of these disorders should be given promptly, satisfactory working diagnoses are needed. We suggest below two aids for the establishment of these.

As a first requirement, the most probable diagnosis in the particular area and group must be known. Prior to our studies in New Mexico and Georgia, *Shigella* infection was thought to be rare and bacillary dysentery was not diagnosed. It was discovered in our work that many of the usual cases of endemic diarrhea, particularly the ones of severe diarrhea, were due to *Shigella*. From these data the local physicians may know that most of the patients with acute diarrhea who come to their attention have specific enteric infection due to some variety of *Shigella*. This type of information can be collected through the cooperation of physicians and health departments and should be readily obtainable in military units. Without it the endemic diarrheal disorders will continue to be poorly diagnosed. There must be also an adjustment of the prevailing concept of the clinical nature of "shigellosis"—it must be appreciated that the varieties of *Shigella* which prevail in this country rarely give rise to the severe bacillary dysentery usually described in medical texts.

Our findings in all areas studied show that *Shigella* paradysenteriae infection is to be considered as the most probable diagnosis for endemic acute diarrhea occurring in older children and adults, particularly during the warm seasons. This is also true of intestinal disorders of younger children and infants in the South and the Southwest. Other causes, such as parenteral infections and dietary factors, appear to be more commonly involved in early infancy.

A consideration of amebic dysentery is the first step leading to an accurate diagnosis, and this disease is

to be considered when persisting, acute, usually "bloody" diarrhea occurs sporadically.

Acute diarrhea caused by *Salmonella* cannot be differentiated clinically from that due to *Shigella*. The former tends to give a higher elevation of temperature, more vomiting, greater abdominal tenderness and less blood in the stools. A certain diagnosis must await laboratory findings.

"Food poisoning" due to *Staphylococcus* is characterized by a brief and stormy course with distressing vomiting, severe diarrhea and little if any fever.

The diagnosis of epidemic diarrheal disease is commonly a joint responsibility of the practitioner and the public health officer. Here the nature of the outbreak provides added information of diagnostic significance. The highly explosive epidemic in which both the outbreak and the cases continue for only a few hours is typical of staphylococcal "food poisoning" and of so-called "sewage poisoning." Infections with true enteric pathogens also occur in explosive outbreaks, but here onsets are distributed through a period of three to seven days, with a peak on the second or the third day. These are most commonly due to some variety of *Salmonella*, rarely to *Shigella*. Epidemics due to the latter ordinarily continue throughout a period of several weeks. Characteristically groups previously free from infection at first begin to have sporadic or endemic cases which gradually increase in number. The peak in incidence may be reached only after a month or more. The decline in clinical cases may be more rapid, but the *Shigella* infection persists thereafter for prolonged periods in convalescent and passive carriers.

LABORATORY DIAGNOSIS

Recent developments in bacteriology have increased the reliability of diagnostic cultural tests for enteric infections. Highly selective mediums which permit growth of the enteric pathogens but inhibit growth of most of the nonpathogens are now available. Fecal specimens obtained by rectal swabs may be used for immediate direct inoculation of the selective mediums. (An ordinary cotton tipped applicator in a small rubber tube having its distal end lubricated is effective and convenient.) For *Shigella* infections plates of S S agar or desoxycholate citrate agar are used. The surface of the medium is "painted" with the swab. For *Salmonella* a broth enrichment (selenite F or tetrathionate) is also indicated. Suspected colonies are picked and identified through standard and relatively simple cultural and serologic tests. By using this highly effective procedure, fecal specimens from patients and their contacts may now be cultured in substantial numbers. This examination may and should be employed freely as the most reliable laboratory diagnostic test; it also can be effectively used for the identification of carriers, which is of obvious importance for control purposes.

Microscopic examination of a fresh warm fecal specimen is indicated when amebic dysentery is suspected. Motile amebas with typical characteristics are frequently present in large numbers. Under these conditions a laboratory diagnosis of amebic dysentery may be made with little probability of error. Reliable identification of cysts is more difficult and requires a highly trained worker.

Agglutination tests with the patient's serum cannot be interpreted with sufficient accuracy to warrant the use of this procedure in diagnosing diarrheal diseases.

TREATMENT

Chemotherapy has a place of major importance in the treatment of diarrheal diseases. Emetine and the iodine and arsenic compounds have long been available for amebic dysentery. More recently the sulfonamides have established their place in the therapy of bacillary dysentery and are effective in the treatment of many of the parenteral infections responsible for diarrhea. Specific therapy is not available for *Salmonella* infections or the "epidemic diarrhea of the newborn." General supportive measures only are needed in "food poisoning" and similar types of diarrhea of short duration.

Two types of sulfonamides are available for bacillary dysentery. There are the poorly absorbed compounds which may be maintained at a high concentration in the intestinal contents while the level in the blood remains low, and there are the more readily absorbed sulfonamides which are also of value in enteric infections. We have studied the clinical and bacteriologic response to three poorly absorbed and five well absorbed compounds. The response to sulfaguanidine, succinylsulfathiazole, sulfadiazine and sulfathiazole has been reported. Since that time we have used these and sulfamethazine, sulfamerazine, sulfapyrazine and sulfathalidine (phthalylsulfathiazole) in more than 1,000 additional persons proved to be infected.

It was evident through a comparison of findings in untreated controls that these sulfonamides all were beneficial in patients with "shigellosis." Flexner varieties of *S. paradyenteriae* were most sensitive to these preparations and Sonne the least. In general the response to the poorly absorbed sulfonamides tended to be delayed, commonly becoming clearly evident clinically and bacteriologically only after twenty-four hours or more of treatment. There was an earlier response to sulfadiazine and apparently also to the newer well absorbed sulfonamides now under observation. Sulfathiazole has been satisfactory in persons with the Flexner variety of infection but has not evoked as favorable a response as other well absorbed compounds in those infected by the Sonne variety.

Pathogenic types of *Shigella* presumably do not grow diffusely throughout the contents of the enteric tract, but rather on or in the wall of the bowel. The absorbed sulfonamides are present in the blood stream, and irrespective of route of administration are soon found in high concentrations in the enteric tract. They are rapidly brought by the blood stream to the site of pathologic activity and approach the organisms both from the tissues and from the lumen. The observed response of *Shigella* infections to absorbed sulfonamides is therefore understandable.

The dose of sulfaguanidine or of succinylsulfathiazole is large, 5 Gm. three times a day for adults being a minimum. During the acute phase of illness, four to six doses may be given daily. We used the well absorbed sulfonamides in 1 Gm. doses three and four times a day in adults. For all preparations the initial dose was twice the maintenance dose. The infections in patients under treatment were followed by daily culture of stools. Medication was discontinued after two consecutive cultures were found negative. On the basis of observations a minimum period of treatment of five days is recommended, to be extended to seven to ten days for infections by the Sonne variety. In all

clinical cases treatment should continue for two days following the cessation of symptoms.

Reports in the literature indicate that *Shigella dysenteriae* (Shiga's bacillus) is inhibited in patients treated with sulfonamide compounds. The data do not indicate the relative sensitivity of this organism to these compounds nor the comparative efficacy of different preparations.

The acute symptoms of amebic dysentery are controlled by emetine hydrochloride, but this drug is a relatively ineffective amebicide. It is a toxic preparation and must be used with caution. The dose for adults is 1 grain (0.065 Gm.) per day, and its use should not be continued longer than the duration of the acute manifestations, with six days as the recommended maximum. For patients with amebic abscess emetine is the only drug of proved value. The available iodine and arsenic preparations are more effective for carriers of the cysts of *E. histolytica*. The dosages for adults are chiniofon 1 Gm. three times a day for seven days, vioform 0.25 Gm. three times a day for seven days, diodoquin 0.5 to 0.75 Gm. three times a day for eighteen to twenty days and carbarsone 0.25 to 0.5 Gm. twice daily for ten days. All these courses of treatment with iodine and arsenic preparations may be repeated if necessary two weeks after completion. If one proves unsuccessful, another may be tried.

CONTROL

Before sulfonamides became available, control measures were directed to the prevention of direct and indirect spread of human excreta from person to person by means of animate or inanimate vectors. Wherever possible this is still the method of choice since improved sanitation and personal hygiene invariably result in better general health for the individual and the community.

Food poisoning may be prevented by proper care in the handling and preparation of foods. Inadequate cleansing of the hands of the cooks, incomplete cooking of foods and long periods of storage after cooking of custards, puddings and salads are the usual causes of these outbreaks. Insistence on proper care in the kitchen will prevent their occurrence. This is essential also for the prevention of outbreaks due to *Salmonella*. If cooking is sufficient to raise the temperature throughout all the food being cooked to the thermal death point of these organisms, epidemics of this type will not occur. That they do occur is largely the result of the inadequate recognition of the time required to raise the temperature in the center of a whole fowl, for example, to such a level.

Radical measures are recommended for the control of epidemic diarrhea of the newborn. Nurseries affected are rigidly quarantined. No new admissions are permitted. The sick are separated from the well, and when possible the latter are discharged to their homes. The nursery is permitted to reopen only after thorough sterilization and a vacancy of two weeks.

The problem presented by *Shigella* infections is more complex. In the general population sanitary measures are a definite aid, but these have not as yet eliminated infections by specific enteric pathogens. In many areas the economic level of the population is such as to preclude effective steps in this direction at present. Adequate treatment of patients with recognized disease will remove some sources of infection, but since patients

with unrecognized infections and persons with sub-clinical infections are more common, this alone cannot be expected to reduce materially the incidence of endemic disorders. This statement is supported by two attempts to control the spread of *Shigella* infections (one in a military group and the other in an institution) by administering sulfonamides to all patients irrespective of the severity of their infection as soon as enteric disorders developed. In neither situation were we successful in eradicating or materially reducing the incidence of disease.

In military groups and institutions careful attention to personal hygiene will do much to decrease the incidence of infectious diarrheal disease. When troops have been stationed in permanent well sanitized camps the diarrheal disorders have been a minor problem. Surveys for carriers under these conditions have shown a low prevalence of *Shigella* infections. The same is true of institutional inmates who are cleanly in their habits and who are housed in a sanitary environment.

However, *Shigella* infections do gain entrance to groups living under less favorable hygienic conditions. Here they tend to spread widely and remain persistently. In military practice this is most likely to occur among troops in new or temporary camps, during field maneuvers or under battle conditions. Among institutional inmates the mentally disturbed patients and the low grade defectives are particularly involved. A high incidence of carriers is found in association with patients showing bacillary dysentery. Two control procedures have been tested for such heavily infected groups: (a) Wherever relatively simple laboratory procedures are available, it is practicable and effective to identify carriers by cultural surveys and to treat all patients and carriers till their stools are culturally negative. The reduction of a high to a very low incidence is readily attained, but complete eradication of all *Shigella* infections is more difficult. (b) The use of small doses of sulfonamides for all persons in such groups also appears promising. A prompt decline in both patients and carriers followed the beginning of this form of preventive therapy in seven groups observed to date. The method must be studied further before it can be recommended as a general control procedure.

In the control of amebic dysentery we urge the necessity of prompt diagnosis and adequate specific therapy to prevent the continuation of the illness and to remove the hazard of death. With regard to the question of treatment of asymptomatic carriers of *E. histolytica* we believe that widespread effort to detect and treat such persons is impracticable and uneconomical. However, the carrier detected by a physician on routine examination should be treated with one of the iodine or arsenic preparations previously mentioned.

NOMENCLATURE

The term dysentery as ordinarily used implies "bloody stools." The designation bacillary dysentery so interpreted would apply only to unusual cases of *Shigella* infection. A name referable to the etiologic agent would be preferable. In line with the accepted use of "brucellosis" for all *Brucella* infections, we recommend the adoption of "shigellosis" for all infections due to pathogenic varieties of *Shigella*.

National Institute of Health.

PRESENT DAY, PROBLEMS OF MALARIA INFECTIONS

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DIAGNOSIS

Malaria infections, either acute or chronic, may be suspected in persons who (a) give a history of having had an attack within the previous two or three years. (b) who have been residents or transients in an area where these diseases are endemic, (c) who exhibit an anemia or splenomegaly otherwise unexplainable, (d) who present an acute febrile illness characterized either by a remittent fever or by intermittent febrile paroxysms with or without rigors and unaccompanied by a leukocytosis and (e) who present any illness with a comatose onset. Furthermore, unsuspected chronic latent infections may become clinically activated by (a) a change in residence involving a material change in climate, (b) traumatic injury including surgical treatment and (c) confinement. The possibility of a malaria infection must not be overlooked in the recipient of a transfusion who develops fever.

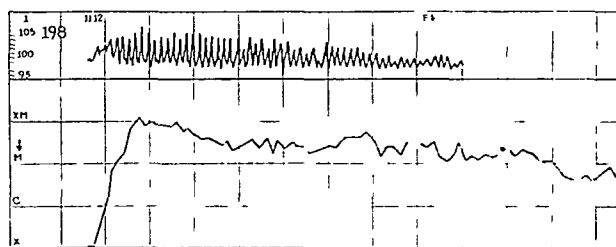


Chart 1—Naturally induced vivax infection terminating spontaneously. Prepatent period eleven days, incubation twelve days, first clinical reaction with density of 10 parasites per cubic millimeter. Remittent fever from 12th to 14th day, insensibly changing to intermittent quotidian. Spontaneous suppression of paroxysm on the 40th day unexplained. Note gradual decline in temperature from maximum of 107 F. in paroxysm on 19th day to 60th day, when it does not exceed 100 F. Maximum parasite density of about 12,000 per cubic millimeter also on 19th day. Clinical activity ceases spontaneously with concurrent parasite density of about 1,800 per cubic millimeter and is still in excess of 400 per cubic millimeter on 93d day from inoculation.

The charts represent the day by day progress of (a) the clinical activity of the infection as reflected in the temperature and (b) the parasite density. The first is displayed in the upper portion of the chart and represents the temperature curve in degrees Fahrenheit taken at four hour intervals. The lower portion, on a semilogarithmic scale, represents by a solid line the density of total parasites (trophozoites and gametocytes) per cubic millimeter as determined from smears routinely taken at about 8 a.m. If the gametocyte density is shown, it is represented by a line of dots and dashes. The lowest line of the 1st cycle of ruling represents a density of 10 parasites per cubic millimeter, the second 100, the third 1,000, the fourth 10,000 and the fifth 100,000. The vertical lines mark the days elapsing since the inoculation by means of infected mosquitoes, the day of which is further marked by the arrow.

By the terms of our definition a definitive diagnosis must be based on the detection of the parasites in a blood smear. Other tests, largely of a serologic nature, have been proposed, some of which may have merit. From the standpoint of convenience and speed these are not, in my opinion, likely to supplant the examination of blood smears. In consideration of laboratory reports, it should be borne in mind that a single or even several negative examinations are insufficient to exclude

From the Station for Malaria Research

This paper, in a symposium on "Tropical Diseases," is published under the auspices of the Section on Practice of Medicine

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the existence of a malaria infection. On the other hand, the detection of a single parasite of unimpeachable morphology is sufficient to recognize the existence of such an infection but would not necessarily justify the attribution of the patient's symptoms to their presence.

Blood smears for malaria diagnosis should be taken with the utmost care and should afford a thin and thick smear on the same slide. The limitations of space do not permit a discussion of the technics for making and staining smears and the morphologic identification of parasites. These are given by Wilcox.⁵ The recent ingestion of antimalarial drugs by a person with a latent infection may make parasites undetectable for some days thereafter. The examination of a thick smear for five minutes is roughly equivalent to the examination of a thin smear for fifteen minutes, thus effecting material saving of time in a busy laboratory. If parasites are not detected within this time it is hardly worth while to spend further time in the examination of this smear, as it is preferable to collect further smears on the following days. However, delays in diagnosis incidental to low parasite densities will not adversely affect later therapy. The report should if possible also specify the identification of the species of any parasite observed. In the event of a diagnosis of falciparum, it is particularly desirable to deter-



Chart 2.—Naturally induced vivax infection, with an induced remission followed by a series of recrudescences and a relapse. The incubation period was of ten days, the prepatent period eleven days. Attack an intermittent quotidian from onset. However, on 15th and 16th and again on 17th and 18th the febrile periods were of about thirty-six hours' duration, with bifid peaks. While common in falciparum infections, these protracted paroxysms are unusual in vivax malaria. A single 10 grain (0.65 Gm.) dose of quinine sulfate given on the 33d did not affect the paroxysm on that or the following days. It did result in a definite depression of the parasitemia, which reached a minimum on the 38th day. Coincident with this depression, a remission occurred which lasted from the 35th to the 40th day. Although the density of the parasitemia was again as high on the 42d day as it was when the quinine was given, it did not remain sustained but underwent a succession of four further depressions and rises, with a clinical remission occurring at each depression and a renewal of clinical activity during each rise. The first four rises are recrudescences, the fifth is a relapse. Note that each period of renewed clinical activity is initiated by tertian paroxysms.

mine the density of parasites per cubic millimeter, for it must be remembered that the clinical attack is but a reflection of the course of the parasitemia. For this the method of Earle and Perez⁶ is useful. It is also desirable to control the effectiveness of the treatment of acute malaria by the daily examination of blood smears continued until the smears become negative.

The lowest parasite density which may be recognized by examination of a smear for the time suggested is approximately 10 parasites per cubic millimeter. In highly susceptible persons clinical activity may, as already noted, be initiated by lower and submicroscopic densities. On the other hand, at the onset of relapses the parasite density will be high, often several thousand per cubic millimeter, as might be expected in a partially immune person (charts 2 and 3). Quartan and vivax

infections commonly exhibit a ceiling to the maximum parasite densities attained. The quartan parasitemias seldom exceed 10,000 per cubic millimeter (chart 8) and those of vivax seldom exceed 50,000 per cubic millimeter (charts 1, 2, 3 and 4). On the other hand, the falciparum parasitemia has no potential limits (charts 5, 6 and 7) and it is important to note that the prognosis is definitely bad if the count attains or exceeds 500,000 per cubic millimeter. The employment of provocatives in suspected latent infections, either to expel parasites from the spleen or to induce a relapse, have not, in the hands of my associates and myself, given sufficiently consistent results to warrant their routine utilization as aids to diagnosis.

It is a matter of regret that many physicians practicing in endemic areas, have based diagnoses of malaria infections on clinical histories, as some still do, and often on the relation by a patient of obscure and, for malaria, atypical complaints. While recognizing that an experienced practitioner will often, perhaps usually, correctly recognize typical intermittent attacks from their clinical manifestations alone, I am of the opinion that this is nevertheless an unfortunate and undesirable practice. It has undoubtedly resulted in ascribing to malaria many conditions for which these infections are not to blame⁷ and has probably contributed in no little degree to the extent to which real or imaginary sufferers indulge in self medication. The burden of proof lies on the diagnostician.

SALIENT CLINICAL FEATURES

Although malaria is a self limited disease, comparatively few physicians in the centuries which have passed since the introduction of cinchona have had opportunity to observe the uninterrupted evolution of these infections, as in general they felt in duty bound promptly to administer the bark, or later the alkaloids, and hence abruptly to interrupt the attack. Therefore the application of induced malaria to the therapy of neurosyphilis, particularly when naturally induced, affords a unique opportunity to reappraise and verify ancient knowledge and extend observations of the experimental disease along modern lines of investigation.

Clinically active malaria infections regardless of the species of their causative parasite exhibit three basic symptoms: (a) fever, (b) anemia and (c) splenomegaly. The first two are definitely related to the development of the parasites, as the fever occurs at the time of their multiplication, and the anemia arises from the destruction of the erythrocytes on which the parasites have fed. The specific infections, particularly falciparum malaria, may in addition exhibit other and very striking symptoms. To one who wishes to pursue this subject further the classic monographs of Marchiafava and Bignami⁸ and Mannaberg⁹ still offer the best extended clinical descriptions.

Fever is the most striking manifestation of clinical activity and may at times be remittent but is more commonly intermittent. Vivax infections in susceptible persons frequently present a remittent fever for a period of from three to five days at the onset (chart 1). Falciparum infections likewise often exhibit a remittance (chart 7). Although such sustained temperatures

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5 Wilcox, A. A. Manual for the Microscopical Diagnosis of Malaria in Man, Bulletin 180, National Institute of Health, Federal Security Agency, United States Public Health Service, 1942.
6 Earle, W. C., and Perez, M. Enumeration of Parasites in the Blood of Malarial Patients, *J. Lab & Clin Med* 17: 1124-1133, 1932.

are clearly due to lack of synchronization in the sporulation time of the parasites, pronounced secondary rises or peaks are usually noted, which indicate the sporulation of large groups of parasites and forecast the later intermittence. The transition from remittance to intermittence is thus usually gradual. The intermittent paroxysms may recur every day (quotidian, chart 1), every other day (tertian, charts 2, 3, 4, 6 and 7) or every fourth day (quartan, chart 8). In the intervals between paroxysms the temperature oscillates within normal limits. About ten days after the onset of the primary attack in susceptible persons, or at the onset of a relapse, the paroxysm is often initiated by a rigor or chill, which may vary in intensity from a slight subjective sensation of chilliness to involuntary muscular contraction accompanied by a sensation of extreme cold. The temperature is meanwhile rapidly rising, but before the peak of the fever is reached the patient is no longer cognizant of cold. At the maximum of elevation, which is not long sustained, profuse perspiration sets in, and the temperature rapidly falls as in a crisis. With the return of normal temperature the patient may become ambulatory and except for a sensation of weakness the vivax infected patient may offer no complaint. However, the quartan paroxysms are definitely more exhausting and the protracted falciparum paroxysms still more so. The period during which the temperature remains elevated during a paroxysm varies with the different infections, in vivax for from six to twelve hours, in quartan from eight to twelve hours and in falciparum malaria from six to thirty-six hours. The vivax and quartan paroxysms usually exhibit a rapid and symmetrical rise and fall of temperature to and from the peak. The protracted falciparum paroxysms may have a sustained period of elevation or have bifid or trifid secondary temperature peaks (chart 7). The regularity and uniformity in the successive paroxysms in vivax and quartan malaria is in sharp contrast to the irregular and asymmetrical fever curve of the paroxysms of falciparum malaria. The maximum temperature attained in a vivax or quartan paroxysm varies to some extent with the current density of the parasitemia and may briefly attain as high as 107 F. or more with no immediate risk to the patient or forecast of a dangerous trend in the infection. On the other hand, an observation of 104 F. or higher in falciparum malaria, particularly if the course is remittent, suggests that the infection may soon get out of hand. It should be stressed that primary vivax infections usually exhibit a series of quotidian paroxysms and that tertian paroxysms are not usually seen until the attack is wearing out or during relapses (charts 2 and 3). Quartan infections usually present paroxysms recurring every fourth day (chart 8) but, as the infection evolves, a new cycle may be injected and the patient will exhibit paroxysms on two consecutive days followed by one paroxysm free day and finally, with the appearance of a third cycle, develop quotidian paroxysms. Thus quotidian paroxysms in vivax malaria are due to the division of two alternating broods of parasites, each requiring forty-eight hours for maturation, and in quartan malaria to the division of three consecutively maturing and overlapping broods, each requiring seventy-two hours. As the infection progresses, synchronization of the parasites improves and the duration of the paroxysm diminishes, while a diminution in the maximum elevation of the temperature forecasts early

extinction of clinical activity by the corresponding brood of parasites (chart 1). The alternating parasite broods which produce vivax quotidiens are not indicative of inoculation on two successive days (charts 1, 2 and 3). While the paroxysms due to any brood in vivax and quartan infections tend to recur at the same hours, more frequently afternoon than forenoon, some broods for reasons not understood take less or more than the conventional forty-eight or seventy-two hours and hence the paroxysm cycles recur earlier (anticipation) or later (postponement) and may finally run around the clock.

Some patients with grave falciparum infections will not subjectively complain of fever but exhibit a cold skin and clammy perspiration, with cyanosis of the extremities. This often accompanies manifestations of gastrointestinal symptoms. It may occur at the onset or after several more or less typical paroxysms.

The development of the anemia may be gradual or rapid and is accompanied by a pallor to which vasomotor disturbance might contribute. It develops most slowly and to the least degree in quartan infections, probably because of the slower growth and lesser density of these parasites, as well as from their predilection for the aging erythrocytes. It progresses more rapidly

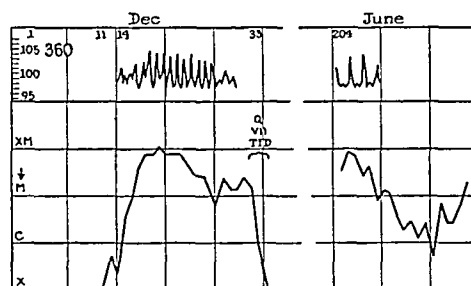


Chart 3—Naturally induced vivax infection, with spontaneous remission during which divided doses of quinine were given during three days, patient later experiencing a recurrence. Note prepatent period of eleven days, incubation period of fourteen days. Slight remittance for three days after onset, followed by protracted paroxysms on 17th 18th and 19th 20th, with bifid peaks, thereafter proceeding as a quotidian. Termination of attack spontaneous on 30th with about 1,500 parasites per cubic millimeter. During the remission 7 grains (0.45 Gm.) of quinine was given twice daily for three days, which drove the parasitemia to submicroscopic levels. On the 204th day following the inoculation the patient had the first renewal of clinical activity, which initiated the first of a series of four tertian paroxysms. The day following the first paroxysm of the recurrence, a parasitemia of about 3,500 per cubic millimeter was observed.

in vivax infections and is probably intensified by the predilection of these parasites for the reticulocytes. Most rapid progress, however, is seen in falciparum infections, which is attributable not only to the greater parasite density attained but by their attack on erythrocytes of all ages. The anemia is hypochromic in type. Since the iron stores are not depleted by this destruction of cells, progress toward restoration of blood loss is rapid during remissions. It is interesting to note that spontaneous remissions usually occur in vivax infections when the erythrocytes are reduced to about 1.5 million per cubic millimeter with hemoglobin about 4.0 Gm.

Enlargement of the spleen is detectable during the second week following the primary onset. The splenic border is rounded, the organ is obviously tense and palpation may be painful. In one attack the enlargement may bring the lower pole to the vicinity of the umbilicus in the course of two or three weeks. With cessation of clinical activity the congestion may rapidly subside or some degree of enlargement may persist indefinitely. Such persisting enlargement suggests

that a latent infection continues.¹⁰ The contracting spleen appears flaccid to the palpating fingers and is found lying more toward the left flank. With repeated enlargement due to either relapses or reinfections the organ may extend to the pelvis, fibrosis develops, probably stimulated by the pigment deposits, the substance becomes firm, the border is sharp, and involution proceeds slowly. The liver may also be enlarged and tender.

Albumin is frequently noted in the urine in amounts exceeding a trace, in infections produced by any species of parasites. However, this is most variable in vivax infections and most consistently noted in quartan infections. In falciparum and quartan this is usually associated with a depression of the plasma albumin. During the period of this depression there may be rises in the globulin and englobulin values. Edema of the extremities is least commonly observed in vivax infections and is most frequent with quartan. In the latter its occurrence may be anticipated with depression of the plasma albumin. The conjunction of edema, albuminuria and reduction in plasma protein leads to the conclusion that a malaria infection produces a nephrosis rather than a nephritis.¹¹

In vivax, but more particularly in falciparum infections, the maturing parasites exhibit a tendency to recede from the peripheral to

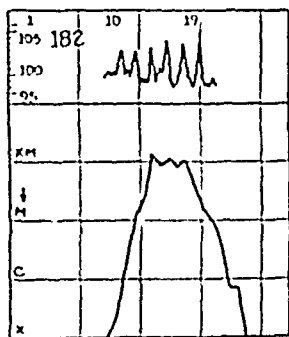


Chart 4.—Naturally induced vivax malaria with early spontaneous termination. Prepatent period ends on 10th day and incubation ends on 11th day, initiating a series of tertian paroxysms which cease spontaneously on the 21st day. Note the rapid spontaneous decline in the parasitemia beginning on the 20th day and descending to submicroscopic levels on the 27th day. This patient must have had previous experience with some other strain of vivax parasites, as he exhibits a heterologous immunity.

the visceral circulation as sporulation time approaches. This is so noticeable in the latter infection that segmenting forms are but rarely seen in smears of peripheral blood unless the infection is overwhelming. This is important in the interpretation of parasite counts made on paroxysm days but prior to the paroxysms, as these will be much lower than those observed in the interpyrexial days (charts 5, 6 and 7). In this retreat the parasites, for reasons unknown, appear more particularly to congregate in the capillaries of some particular viscus of the cerebrum, lungs or intestine. Since the erythrocytes infected with these parasites appear shrunken and rigid and, owing to a coating of fibrin appear adhesive,¹² they produce extensive capillary blockade. Consequently falciparum infections more particularly may present additional striking and variable symptoms, which are often referable to the viscus in which sporulation is occurring and which may mislead the physician unless blood smears are routinely taken. Space does not permit detailed discussion of these nearly infinite variations, which have received elaborate clinical classifications,¹³ but special mention may be made of (a) continued fever with or without hyperpyrexia, (b) hypopyrexia, (c) various

cerebral manifestations including coma, delirium and convulsions, (d) various symptoms referable to the gastrointestinal tract including persistent vomiting, often bilious, dysenteric or diarrheal evacuations, sometimes with hemorrhage from the bowel, (e) symptoms suggesting acute bronchitis or pneumonia, (f) weak pulse and syncope, thrombosis and hemorrhages, edema and dropsy, acute progressive anemia, sometimes hemolytic, (g) icterus, (h) albuminuria, hematuria and hemoglobinuria. The latter condition is often differentiated as blackwater fever.

Untreated primary attacks may vary greatly in their duration, depending on the degree of the patient's susceptibility and the species of parasite. Quartan infections may continue clinically active for as long as nine months (chart 8), vivax infections, spaced out by spontaneous remissions, may continue for approximately one hundred days (chart 2), although if remissions do not intervene I have not observed them to exceed nine weeks (chart 1), while falciparum infections are the shortest and will not often exceed six weeks in duration (charts 6 and 7). In these protracted infections the severity of the paroxysms gradually diminishes coincident with a reduction in the elevation of the temperature. The change may be more pronounced in one cycle than the other, in which case the cycle most affected may drop out and the course is continued as a tertian. The termination of the course is similar to a lysis (chart 1). In my opinion any clinical activity noted within these limits, even though interrupted by one or more spontaneous remissions, is essentially attributable to the primary parasitemia. In such patients clinical activity ceases while the parasite density is still high (chart 1), and the latter gradually decreases but persists at microscopic levels for several weeks.

In falciparum infections gametocytes are not observed until about ten days after the first appearance of trophozoites (charts 5, 6 and 7). Their appearance is frequently made manifest by a sharp decline in the density of trophozoites often sufficient to produce a clinical remission. This may mark the end of the attack (chart 5). In more susceptible persons trophozoites will return to pyrogenic levels in about ten days more, and clinical activity will be resumed (chart 6). A falciparum attack will consist of one or more such units of alternating waves of trophozoites and gametocytes (charts 6 and 7). In vivax infections gametocytes are present practically from the onset, while in quartan their production is scanty and irregular. Since both clinical activity and gametocyte production are proportional to the density of the parasitemia, those who are, or who have recently been, clinically ill will be the most infectious to anophelines, both qualitatively and quantitatively. After latency is well established, patients may again become slightly infectious if subclinical rises occur in their parasitemia.

However, vivax and quartan infections whose natural evolution has been interrupted by early remissions therapeutically induced show a definite and annoying tendency to resume clinical activity at a later date, even after the lapse of a year or more (chart 3). Falciparum infections probably do not persist in a latent condition for more than a year, vivax may persist for two or perhaps even three years, while quartan latency may persist for protracted and unpredictable periods. Resumption of clinical activity, if occurring within eight weeks of the cessation of the primary attack, is dis-

10 Stratman-Thomas, W. K. Studies on Benign Tertian Malaria. Observations on Splenomegaly, *Am. J. Hyg.* 21: 361-363, 1935.

11 Boyd, M. F., and Proske, H. O. Observations on the Blood Proteins During Malaria Infections, *Am. J. Trop. Med.* 21: 245-260, 1941.

12 Kmsely, M. H.; Stratman Thomas, W. K., and Eliot, T. S. Observations on Circulating Blood in the Small Vessels of Internal Organs in Living Macacus Rhesus Infected with Malarial Parasites, *Anat. Rec. (supp. 2)* 79: 90, 1941.

13 Marchiafava and Bignami. Nannaberg.

tinguished as a recrudescence (chart 2) and, since practically all these arise within one hundred days of the onset, before the primary parasitemia has descended to submicroscopic levels, should properly be regarded as part of the primary attack. Further clinical activity occurring in from eight to twenty-four weeks after the cessation of the primary attack is designated a relapse, and if arising after an interval longer than twenty-four weeks it is known as a recurrence (chart 3).

Persons who have had previous experience with other strains of the same species of parasite will experience attacks of varying duration but usually of not over two weeks (chart 4). These terminate abruptly with a rapid decline in the parasitemia.

TREATMENT

The treatment of malaria infections is symptomatic and specific. The former is practiced concurrently with the specific, chiefly to alleviate symptoms which distress the patient or interfere with specific treatment; specific therapy is directed to the destruction of the parasites.

Until the fever is checked the patient should be confined to bed, while for two weeks subsequently activity should be limited to very moderate ambulatory exercise.

If the hyperpyrexia observed during a paroxysm is due to sporulation of parasites alone, its duration will be transitory and will rarely require interference except for the comfort of the patient. If it persists it may be suspected that the cerebral heat centers are affected. In this case tepid sponging or cold baths may be employed, their duration being controlled by the rectal temperature. During this time an abundant intake of cool fluids should be encouraged, which should be supplemented by sodium chloride. When free perspiration is begun the patient should be rubbed dry and changed to dry clothing. On the other hand, if the temperature is subnormal the patient should be well provided with covers and numerous hot water bottles. Several sinapisms should be applied to different parts of the body, and hot beverages should be supplied. Since these patients often suffer from constipation, purgation should be effected if necessary, and daily doses of liquid petrolatum given subsequently. Nausea, and vomiting in particular, may interfere with the oral administration of specific drugs. They may often be controlled by cracked ice with or without lime water. If uncontrollable by this means, 5 minims (0.3 cc.) of tincture of opium or 5 to 20 grains (0.3 to 1.3 Gm.) of chlorobutanol may be given. Other symptoms are appropriately met as the need arises. Patients with edema should receive a high protein diet, and those with icterus a high carbohydrate and vitamin diet.

An excellent discussion of the treatment of malaria, based on an extensive experience, has been presented by Dove,¹⁴ while the monograph of Field¹⁵ is the most exhaustive recent treatise. The Fourth General Report of the Malaria Commission of the League of Nations should also be consulted.¹⁶

The specific treatment of malaria is parasitocidal and must take into consideration the different stages of the

parasites which are concerned with the human host, namely the infecting or sporozoite stage, the vegetative (trophozoite) stage, to the multiplication of which clinical activity is due, and the gametocytes which render the patient infectious.

Of recent years the specific therapy of malaria has undergone profound modification, owing (1) to an enlargement of the physician's armamentarium by the introduction of the useful synthetics plasmochin and atabrine, (2) to the recent capture of the principal areas of cinchona production by the enemy, which have caused available stocks of the alkaloid quinine to be reserved for military use and the substitution therefor of totaquin, a standardized preparation containing all of the crystallizable alkaloids present in American barks, and (3) the possibility that current research may result in the discovery of still more efficient synthetics. Information of progress in this field of research will likely be withheld until the end of the war. Present dosage regimens of antimalarial drugs have largely developed empirically. It is hoped that present studies on attainable concentrations in the blood will permit of their more scientific utilization.

SUPPRESSIVE TREATMENT

Quinine has been routinely taken for years by those resident in endemic areas, and of later years atabrine has been similarly ingested, in the belief that it will

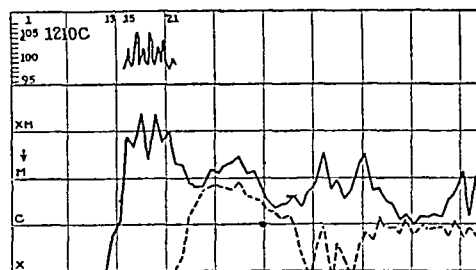


Chart 5.—Naturally induced falciparum malaria in a Negro patient, the attack terminating spontaneously. Prepatent period ends on 13th day, incubation period on the 15th day. Attack consists of a series of six unequal quotidian paroxysms. The cycle of the day of onset, on that and the subsequent days of its tertian reappearance, is distinctly weaker than its alternate. The maximum parasite density attained was about 24,000 per cubic millimeter, a low density for this parasite. Clinical activity ceased spontaneously because of a coincidental drop in the parasitemia density on the 22d, on which day gametocytes were first seen. The trophozoite minimum was reached on the 26th, they increased slightly for five days thereafter, and then they underwent a second decline and a further rise, neither of which was accompanied by clinical activity.

ward off infection from the bite of an infected mosquito. Any drug that might possess the property of destroying sporozoites or the succeeding stage of the parasites would be a true causal prophylactic. Unfortunately quinine does not possess this property, nor is it dependably exerted by atabrine, nor is there any other known available drug which possesses this characteristic. This deficiency in these drugs, or misconception of their properties, should not however deter us from their employment under certain circumstances. While they will not prevent a person from contracting infection, they will check the multiplication of parasites sufficiently so that most protected persons will not develop active clinical malaria during the period in which they are ingested. Their employment is thus more appropriately described as suppressive treatment. Their routine distribution where large bodies of men are suddenly brought in an emergency into unsanitated areas for construction or military purposes will temporarily avoid the incapacitation of many from malaria. However, on the withdrawal of these men from such areas and with the suspension of treatment many will develop

14. Dove, W. S.: The Treatment of Malaria, *Am. J. Trop. Med.* 22: 227-234, 1942.

15. Field, J. W.: Notes on the Chemotherapy of Malaria, *Bulletin* 2 of 1938, Institute for Medical Research, Federated Malay States, Kuala Lumpur, 1939.

16. The Treatment of Malaria: Study of Synthetic Drugs, as Compared with Quinine, in the Therapeutics and Prophylaxis of Malaria, fourth general report of the Malaria Commission, *Quart. Bull. Health Organ., League of Nations* 6: 895-1153, 1937; off-print no. 5, Geneva, 1937.

acute clinical malaria about two weeks later. As at present practiced, adult males are given 0.1 Gm. of atabrine daily at the evening meal on six days each week. The practice is not an adequate substitute for sanitation.

TREATMENT OF THE ACUTE ATTACK

The attack on the schizogonous cycle of the parasites constitutes the specific therapy of the active infection, and for this purpose the civilian practitioner is now practically limited to totaquin and atabrine dihydrochloride. From the standpoint of their parasitocidal action the properties of the two drugs are closely parallel, and there is little choice between them, but effective concentrations in the plasma are built up more rapidly in the case of the cinchona alkaloids. The assault on the schizogonous cycle should be directed to two objectives. The first is the treatment of the acute attack, by which it is sought to reduce the parasitemia to such low levels that a clinical remission results. An acute attack may be the manifestation of a primary infection, a recrudescence, a relapse or a recurrence. This is usually readily accomplished. The second should be the eradication of the infection from the human host or the accomplishment of a cure. This requires treatment of the latent infection. With available drugs this result is highly uncertain, and under

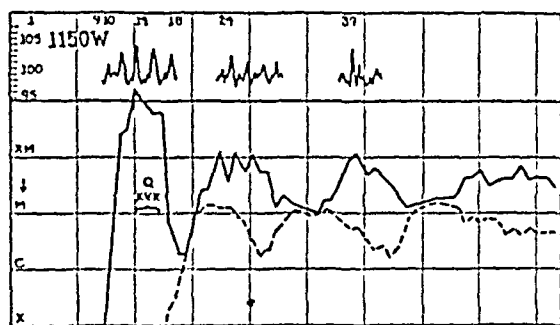


Chart 6.—Naturally induced falciparum infection in a white patient. Prepatent period ended on 9th day, incubation period ended on 10th day. Density of parasitemia exceeded 100,000 parasites per cubic millimeter on the 14th day, necessitating administration of single 0.6, 0.3 and 0.6 Gm. doses of quinine on the 14th, 15th and 16th days to control its exuberance. It is not apparent that these contributed to the drop in parasite density on the 18th day, coincidentally with the appearance of gametocytes. It should be noted that each period of clinical activity is attributable to a wavelike rise in the trophozoite parasitemia and that the density of trophozoites fell off with the appearance of gametocytes, each resulting in a spontaneous remission in the attack. During the period of observation, each of the first three trophozoite waves has been followed by a wave of gametocytes, which reached their maximum during the remissions.

ordinary circumstances success is not readily demonstrable.

Certain general principles should be observed in the employment of plasmodicidal drugs. Oral administration is always the route of choice, and the occasions when parenteral administration is required are unusual. Absorption from the stomach is so rapid that no material time is saved by parenteral administration. Parenteral administration should be limited to comatose patients or those with hyperpyrexia or in whom vomiting has proved uncontrollable. If parenteral administration is required, atabrine rather than quinine should be the choice, and the intramuscular rather than the intravenous route should be selected. It should, however, be mentioned that quinine dihydrochloride is still available for parenteral therapy. Injection should be made deeply into the gluteal muscles of both buttocks at a point about 3 inches below the iliac crest, with subsequent thorough massage of the site. Such an injection may be repeated after twelve hours but should not be continued after the patient can take medication by mouth.

The dosage of the drug employed must be adequate and should be initiated as soon as practicable after diagnosis is effected. Certain strains of *P. falciparum* appear to require larger doses to effect a satisfactory response, but I am skeptical that a parasite strain is likely to acquire a drugfastness. Differences in the strains of parasites prevalent in various regions probably account for divergences in reaction to treatment. While in general totaquin, like quinine, should be administered before meals and atabrine after meals, one of the daily doses should be scheduled to be given about one hour before the occurrence of the next anticipated paroxysm in order that a maximum plasma concentration may be available when the young merozoites are liberated. It should not be expected that the initiation of treatment will forestall the next anticipated paroxysm, or even the one due on the following day, but if treatment is adequate and the drug is properly absorbed, paroxysms should not occur on the third and subsequent days. It is helpful to control the effect of the drug by daily parasite counts. If quinine has been employed, only exceptional patients will show a few parasites, other than falciparum gametocytes in smears taken on the fifth day after treatment was initiated. If atabrine was administered, a few patients may exhibit parasites as late as the seventh day. During these periods the counts on successive days should exhibit a progressive decline. If these conditions are not soon met, it should be ascertained whether the patient is absorbing and excreting the drug, by applying appropriate tests to the urine. While not incompatible, nothing is gained by undertaking to administer the two drugs concurrently.

Totaquin (totaquina) is a preparation originally developed under sponsorship of the Malaria Commission of the League of Nations in order to supply a cheaper effective antimalarial drug through the utilization of all the alkaloids from cinchona barks the quinine content of which is too low for the profitable extraction of that alkaloid alone.¹⁷ Under present circumstances this is the most efficient manner in which to employ the limited stocks of American barks, which are the only supply available, and utilize the parasitocidal properties of the other crystallizable alkaloids of cinchona which have heretofore been largely ignored, although they are just about as effective plasmodicides as is quinine.¹⁸ The preparation as standardized in accordance with the U. S. P. XII contains not less than 7 nor more than 12 per cent of anhydrous quinine, and a total of not less than 70 nor more than 80 per cent of the anhydrous crystallizable cinchona alkaloids, the latter term including quinine, quinidine, cinchonine and cinchonidine.¹⁹ It should be prepared in friable tablets or placed in capsules for administration by mouth and should be administered in doses corresponding to those of quinine sulfate. It should not be given in fluid mixture. Totaquin is not available for parenteral administration. It is probably as inadvisable to administer totaquin to a pregnant woman as it would be to administer quinine. Totaquin should be administered to adults in divided doses in not less than 0.6 Gm. (10 grains) daily per 50 pounds (23 Kg.) of body weight.

17. The Therapeutic Efficacy of Totaquina in Human Malaria, Quart. Bull. Health Organ., League of Nations 3: 325-358, 1934.

18. Dawson, W. T.: Cinchona Alkaloids and Bark in Malaria, Internat. Clin. 2: 121-149, 1930. Fletcher, W.: Notes on the Treatment of Malaria with the Alkaloids of Cinchona, London, John Bale, Sons & Danielsson, Ltd., 1923.

19. Weed, L. H.: Critical Antimalarial Problem and Its Solution, J. A. M. A. 120: 1043-1044 (Nov. 28) 1942.

For an adult of 150 pounds (68 Kg.) this is the equivalent of 0.6 Gm. or 10 grains three times a day. Adult dosage may be given to all over 12 years of age. Dosage for children should be reduced in proportion to their age, while a baby may be given at least 0.06 to 0.09 Gm. (1 to 1½ grains). Field²⁰ considers that children should be given proportionately large doses. Doses should be given before meals and continued for seven days.

Prior to the last decade it was commonly recommended that a daily ingestion of 0.6 Gm. of quinine be continued for eight weeks after the acute attack was brought under control, in the belief that relapses were largely avoided thereby. It is doubtful whether many patients can be depended on to continue such protracted medication, while the convenience of the short period required for a single course of atabrine has tended to stimulate a curtailment in the period over which quinine is now frequently administered. The concurrent administration of plasmochin 0.01 Gm. thrice daily after meals is, however, considered a desirable adjuvant in the treatment of vivax infections, as lessening the likelihood of a relapse. Absorption of some of the cinchona alkaloids at least is rapid, excretion of quinine being detectable within fifteen to twenty minutes after the administration of a dose. Excretion is detected by the application of Tanret's test to the urine.²¹ While tinnitus and deafness may be an inconvenience to the patient, they are reassuring evidence of absorption. If the other cinchona alkaloids behave similarly to quinine, it may be assumed that the greater quantity is disintegrated in the body and that such slight stores as have accumulated are fully depleted within seventy-two hours after the last dose of a course is taken.

Atabrine dihydrochloride, or quinacrine, is an acridine dye developed in 1930 by Kikuth with the collaboration of Mietsch and Mauss. It is available in 0.1 Gm. tablets. Prior to our entrance into the war the complete synthesis of atabrine in the United States was not practiced. In view of the critical quinine situation it is fortunate that American chemists have succeeded in its synthesis and that large scale manufacture is now under way. Extensive chemical, pharmacologic and clinical studies have demonstrated that the American product is in all respects identical with the German drug.²² It has now been admitted to the United States Pharmacopeia under the name "quinacrine."

While most persons tolerate the doses recommended, a few may not support without discomfort even the mild regimen of suppressive treatment. These complain of headache, dizziness, nausea and vomiting, and diarrhea. These reactions are avoided by the concurrent administration of alkaline or sweetened beverages. Less frequently the drug has been reported to have produced a definite slowing of the respiration and cerebral excitation which may even attain maniacal proportions.

Atabrine is usually administered to adults after meals, one 0.1 Gm. (1½ grain) tablet being given three times (four times to large adults) a day for five days, or at least until four days have elapsed since the last fever. Children under 1 year may tolerate a total daily dose of 0.05 Gm., from 1 to 4 years of age 0.1 Gm., from 5 to 8 years 0.2 Gm., and those over 8 may be given a daily

total of 0.3 Gm.²³ These fractional doses are best given in milk.

In order to accelerate the action of atabrine by more quickly building up an effective plasma concentration, it is now recommended that adults initially receive 0.2 Gm. (3 grains) by mouth every six hours for five doses, which is thereafter reduced to 0.1 Gm. (1½ grains) three times a day for six days. The early elevated doses are accompanied by 1 Gm. (15 grains) of sodium carbonate in 200 to 300 cc. of water, sweetened tea or fruit juice.

For parenteral administration a dose of 0.2 Gm. may be dissolved in from 5 to 10 cc. of sterile distilled water. The effect of atabrine is not exerted as rapidly as that of quinine, a difference attributable to notably slower absorption, although urinary excretion is detectable within a few hours. Neither is its excretion as rapid, and the drug tends to accumulate, so that excretion continues for five weeks or more after the termination of a course. This may be the chief advantage of atabrine over quinine. Its excretion in the urine may be verified by the method of Wats and Ghosh.²⁴ For this reason courses of atabrine should not be repeated in less than a month's time. The small margin of safety between the therapeutic and toxic doses is probably related to the rapidity with which the blood level is raised and makes

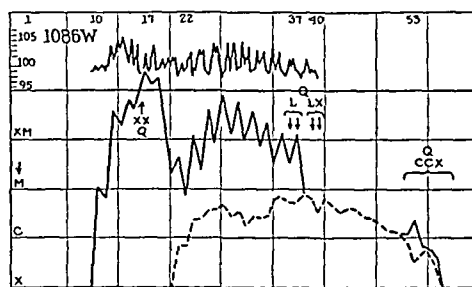


Chart 7.—Naturally induced falciparum infection in a white patient. Prepatent period ended on 10th day, incubation period on 12th day by a period of remittent fever lasting five days and changing to an irregular intermittent, which later became tertian, exhibiting prolonged paroxysms with bifid peaks suggestive of a quotidian. On the 17th day the parasitemia density exceeded 200,000 per cubic millimeter, when two 0.6 Gm. doses of quinine were given. This effectively restrained the exuberance of the parasitemia. The parasitemia was declining the day before gametocytes were first noted, but the decline was insufficient to produce a clinical remission, although the coincidental paroxysms were notably weaker. With the return of the trophozoites the counts on successive days oscillate widely. The attack was terminated by a total of 3.3 Gm. of quinine on the 37th and 38th day and a total of 4.0 Gm. on the 40th and 41st. Note the resistance of the gametocytes to these doses. Evidently the gametocyte waves which corresponded to the two trophozoite waves have fused. On the 53d day there began a seven day course of quinine, during which 14 Gm. of quinine was given.

it essential to avoid overdosage and the development of accumulations which may reach toxic levels. As the drug accumulates the patient may exhibit a yellowish discoloration of the skin, which should not be mistaken for jaundice but is a manifestation of its dye property. Plasmochin should never be concurrently administered, as gastric complications, pain and loss of appetite may occur.

Although intravenous therapy is counseled against, occasions may arise when it is considered imperative. It should not be continued after medication can be taken by mouth. The dose should be well diluted in at least 200 cc. of sterile saline solution and at least twenty minutes allowed for the injection. In the case of quinine particular care should be taken to see

²⁰ Field, J. W.: Notes on Totaguina, League of Nations Health Organization, Official No. C. H. Malaria/214, Geneva, World Peace Foundation, 1934.

²¹ Nierenstein, M.: Report on the Excretion of Quinine in the Urine, in Observations on Malaria by Medical Officers of the Army and Others, Great Britain War Office, London, His Majesty's Stationery Office, 1919.

²² American Atabrine, Current Comment, J. A. M. A. 120: 842 (Nov. 14) 1942.

²³ Nocht, B., and Mayer, M.: Malaria. A Handbook of Treatment, Parasitology and Prevention, London, John Bale, Sons & Curnow, Ltd., 1937, p. 45.

²⁴ Wats, R. C., and Ghosh, B. N.: Quantitative and Qualitative Methods for Detection of Atabrine in Urine, Rec. Malar. Survey India 4: 367-370, 1934.

that the needle is in the lumen of the vein. Fifteenth Gm. ($7\frac{1}{2}$ grains) of quinine dihydrochloride, or 0.2 Gm. (3 grains) of atabrine may be given as a dose to an adult. To the quinine solution may be added 0.5 to 1 cc. of a 1:1,000 solution of epinephrine hydrochloride. Neither drug should be given more than twice in twenty-four hours. One should guard against collapse.

In an effort to effect still further economies in the consumption of cinchona alkaloids and permit the patient to benefit from both the more rapid action of these alkaloids and the delayed excretion of atabrine, it is now recommended²⁵ that they be employed consecutively but not concurrently, as was early suggested by Dargan²⁵ as follows: Give totaquin or quinine as previously suggested for two or three days or until the paroxysms are suppressed, then change to atabrine as previously suggested for five days. If plasmochin is indicated, its administration should await the completion of a five day rest period.

In those falciparum infected patients with a parasitemia exceeding 500,000 parasites per cubic millimeter the prognosis to ordinary therapy is, as has been said,

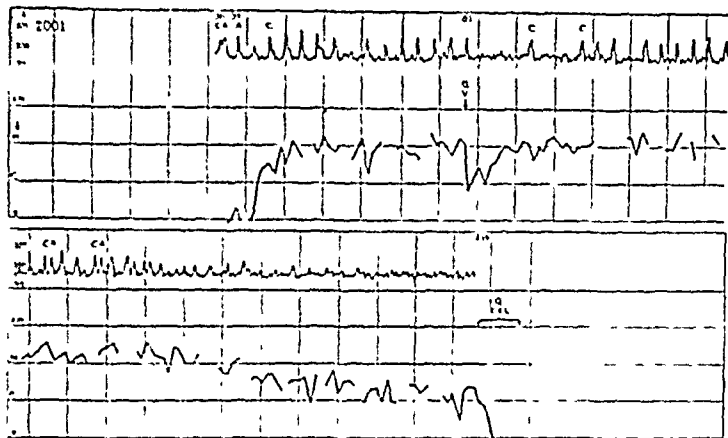


Chart 8.—Naturally induced quartan infection in a white patient. The incubation period required thirty-six days and the prepatent period required thirty-nine days. The onset presented a remittent fever for thirty-six hours and, subsequent to the intermission, changed to a simple quartan intermittent. On the 81st day the administration of 5 grains (0.3 Gm.) of quinine produced a remission lasting eleven days, owing to a depression in the parasitemia. Some irregularities occurred before regular quartan periodicity was restored, and still later a few double quartan paroxysms were noted. Except during the latter period, when some counts slightly exceeded 3,000 per cubic millimeter, very few counts at other times exceeded 2,000 per cubic millimeter. With a gradual spontaneous decline in the parasitemia, the paroxysms diminished in intensity and insensibly ceased. Subsequently 9.3 Gm. of quinine was given in divided doses over eight days.

bad. It is suggested that in addition to the routine therapy these patients may benefit from the mechanical removal of parasites by copious bleeding, the patient at the same time receiving a transfusion of an equal volume of blood from a compatible donor. The amounts removed should be large, totaling a liter or more of blood in twenty-four hours in one or more venesections.

Recrudescences, relapses and recurrences should be treated as suggested for primary attacks. It is frequently difficult to differentiate these from new infections. In some instances differentiation is possible. Thus, if at the clinical onset the parasitemia density is low and enlargement of the spleen is not detectable, a new infection is to be inferred. If on the other hand at the onset the density of parasitemia is appreciable, perhaps even as high as four or five thousand per cubic millimeter, and the spleen is enlarged, one is probably dealing with reactivation of a previously latent infection.

GAMETOCIDAL THERAPY

Patients with vivax or quartan malaria who are receiving adequate therapy with totaquin or atabrine will have the gametocytes destroyed along with the trophozoites and hence are soon noninfectious. However, those falciparum patients with mature gametocytes still remain infectious while taking adequate doses of these drugs, as the sexual forms are for some reason resistant. Plasmochin, a quinoline derivative, has little action on trophozoites of any species but possesses the unique property of devitalizing the infecting stage of the falciparum parasites, thus making the patient who receives it noninfectious. This constitutes the greatest field for the use of plasmochin. For this purpose it is given in 0.01 Gm. doses three times a day concurrently with each dose of quinine or totaquin during the last five days of the seven day course, or in the same amounts and for the same period, but subsequent to a course of atabrine, an intermission of five days being allowed between the two series. It should be administered after meals. Overdosage with plasmochin will result in the formation of methemoglobin, and the patient will appear cyanotic and may also complain of abdominal pain, sweating or cardiac symptoms. Consequently its administration should be under supervision.

TREATMENT OF LATENT INFECTIONS

Infections may be considered latent (a) immediately after therapeutic intervention has produced a remission in an acute attack and (b) when parasites are discovered on routine smear examination of an afebrile patient. Such patients often exhibit an anemia and splenomegaly and may find considerable inconvenience from the enlargement of this organ. As long as a patently latent infection is existent it should be borne in mind that recrudescences in falciparum malaria and relapses and recurrences in vivax and quartan malaria are a possibility. While in general unpredictable, yet in vivax infections they unquestionably occur more frequently in the spring. Persons with latent infections may have subclinical rises in their parasitemia and become transitorily infectious and are probably the principal if not the sole factor in maintaining the endemic from one season to the following.

Since the ultimate extinction of a malaria infection probably is more attributable to the activation of the body's immune mechanism than to the administration of the drugs under discussion, the physician faces a problem. Should treatment be protracted in the hope that relapses and recurrences will be prevented or should it be withheld in the expectation that, if there is a renewal of clinical activity, active treatment will be resumed? Opinions will differ and the last word cannot yet be said. In the event that protracted therapy during an induced remission or the treatment of a latent infection is considered indicated, successive courses of atabrine and totaquin should be alternated. In such an event atabrine given as previously described for treatment of the acute attack is administered as the first course, which without delay is followed by a course of totaquin and plasmochin also given as described except that the period over which it is administered is expanded to fourteen days. Each dose of totaquin may be reduced to 0.3 Gm. (5 grains). If further treatment is desirable the courses are repeated, but a rest period of perhaps ten days should intervene between the last day on which totaquin was given and the first day on which the second course of atabrine is begun.

25. Dargan, P. A.: The Therapeutics of Malaria, Indian M. Gaz. 69: 117, 1934.

If splenomegaly is persistent, Ascoli and Diliberto²⁶ advocate the intravenous administration of a protracted course of epinephrine. They begin with 0.01 mg. given daily or on alternate days if the reaction is intense. When any dose is finally supported with little reaction it is gradually stepped up in 0.01 mg. stages until 0.1 mg. is finally given. This is repeated twenty or thirty times until the spleen subsides, which usually happens in about two months. The reaction to the dose is immediate, the patients manifesting pallor, headache, tremors, sometimes psychic and motor excitation, and palpitation.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. DYER, DRs. HARDY AND
WATT AND DR. BOYD

DR. JOSEPH S. D'ANTONI, New Orleans: I am in complete agreement with the substitution by Drs. Hardy and Watt of the definite term shigellosis for the indefinite term bacillary dysentery. The change is logical from the standpoint of etymology and is further justified by the infrequency of dysentery of *Shigella* origin. I prefer, however, to distinguish more clearly than do the authors between diarrhea and dysentery, because of the possible end results of the two conditions. Whenever dysentery has been present there is a stronger likelihood of permanent bowel dysfunction. A diarrheic stool is a watery stool of fecal composition. A dysenteric stool consists of mucus, blood, cellular debris and pus, the passage of which is always associated with tenesmus. Diarrhea may or may not be interpreted by the patient as an abnormality of intestinal function. Dysentery would be considered abnormal by all patients, regardless of their usual bowel habit. The patients' interpretation of diarrhea and dysentery leads to the question of how many persons with such intestinal disorders consult the physician. A surprisingly large number with diarrhea do not. Of the 380 positive passive carriers of *Shigella* identified by the authors, only 2 were under the care of a physician, although 38 presently had diarrheal symptoms and 89 were convalescent. One of the group, indeed, was so ill that he died within three days of the survey. One might suppose that any patient with dysentery would seek medical aid at once, but, incredible as it seems, I recall a case of chronic amebic dysentery in a 55 year old Negro who had had from eight to ten bloody stools daily for three years. He claimed that he had not previously come to the hospital, a distance of 3 miles, because he knew he would have to defecate along the way. I am not in complete agreement with the usual impression that passive carriers of *Shigella* exhibit no clinical symptoms. My experience is that many patients considered as psychoneurotic, who complain of various gastrointestinal symptoms, with or without diarrhea, low grade fever and migratory polyarthritides, frequently, when properly investigated, are found to be suffering from shigellosis. Many of them, if questioned, can recall a previous history of dysentery, and most of them can recall a previous history of diarrhea, though it is true that similar histories might be obtained in any similar selected group of patients. In some cases which I have observed I have identified the same species of *Shigella* in both the earlier and the later illness, although in the interim the stools were negative and cure had been presumed. The authors' emphasis on repeated stool examinations in shigellosis is entirely correct. My own experience has been that an average of five cultures (using five differential mediums) may be necessary before a diagnosis can be made. It is important to emphasize the necessity of a thorough investigation of all patients with diarrhea who consult the physician. In *Shigella* infections the diarrhea in the majority of cases is mild and seldom lasts more than three or four days, yet the infection persists long beyond this time. The diagnosis of epidemic diarrheal disease, as the authors point out, is the joint responsibility of the practicing physician and the health officer, and the characteristics of the epidemic furnish the first clue to diagnosis.

DR. JOSEPH FELSEN, New York: Some idea as to the prevalence of bacillary dysentery may be gained by the fortyfold increase of reported incidence in 1941 as compared with 1933; and the reported incidence is but a fraction of the actual incidence. Diarrheas secondary to primary extraenteric infections are best termed "focal nonspecific enterocolitis," the pathway of bowel involvement being through the indirect hematogenous excretory mechanism. Most positive cultures in acute bacillary dysentery are obtained during the first three days, regardless of the degree of severity. When diarrheal cases in the United States are studied as a group, most of them appear to be bacillary dysentery. Carriers in this disease are "sick" carriers, as revealed by thorough clinical study, including sigmoidoscopy. There is a characteristic three stage progression of pathologic change: punctate follicular hyperplasia, punctate follicular necrosis, and discrete and confluent ulceration on the first, second and third days respectively. These are easily recognizable in the living patient by means of the sigmoidoscope, irrespective of the severity of the disease. The weakest links in the dysentery problem have been the educational and clinical. Prompt isolation, control of food handlers and education of the physician and layman are of paramount importance. Public health officials are concerned with statistical, epidemiologic and bacteriologic studies rather than thorough clinical investigation. A tabulation of epidemiologic data, strains and symptoms is no substitute for careful sigmoidoscopy and clinical acuity. Physicians must learn how to recognize the disease before they can report it. For this reason a clinical classification into the typical and atypical forms (afebrile, asymptomatic, constipated, appendicular, pneumonic, agranulocytoid and meningitic) is most important. Infectivity bears no relationship of severity. In fact, atypical or subclinical forms are often chiefly responsible for the spread of the disease. The Dysentery Registry has proposed as part of its educational program the formation of public health diagnostic teams composed of a suitably trained clinician, bacteriologist and public health worker. I have found sigmoidoscopic crypt aspiration cultures most effective, using a fresh Endo or SS medium. The sulfonamide drugs are a distinct advance but no panacea for bacillary dysentery. More recent advices received from civilian and military sources reveal an increasing number of recurrences and of carriers following the use of the sulfonamides. The absorbed drugs appear to be more effective than those which tend to remain local, the latter being rare in the ulcerated bowel. I again urge vaccination as a prophylactic measure, using endemic strains. Hardy and Watt also noted the protection afforded by a previous attack against subsequent infection with the same strain.

LIEUT. COL. THOMAS T. MACKIE, M. C., A. U. S.: Clinical similarities have rendered classification within the group difficult in the past, and it is only since the application of more exact immunologic methods that the distinction between the four major groups has become evident. Today a sharper distinction may be drawn between the three diseases in the typhus group: European or epidemic typhus, murine or endemic typhus and Brill's disease, and further that Brill's disease and murine typhus are distinct entities. Zinsser, on epidemiologic grounds, originally advanced the theory that Brill's disease represents a recrudescence of an old attack of European or epidemic typhus fever. Recently Plotz, investigating the complement fixation reaction, using unabsorbed and absorbed serums from a group of cases of Brill's disease has obtained strong confirmatory evidence indicating different antigenic patterns in the endemic and epidemic rickettsias respectively. It appears now, therefore, that Brill's disease is in fact a response to the epidemic or European strain in an individual already partially immune from a previous attack of European typhus and that these cases both etiologically and epidemiologically are distinct from the endemic or murine typhus. As Dr. Dyer points out, only two of these diseases, epidemic typhus and tsutsugamushi or Japanese river fever, have military importance. The wide distribution of the latter disease in Southeast Asia and the islands of the Southwest Pacific suggest that it may be a factor in military operations in those areas. Rocky Mountain spotted fever, however, has more immediate interest for the United States in view of its already wide distribution. The investigations on which this classification is

²⁶ Ascoli, M., and Diliberto, U.: Therapy of Chronic Malarial Splenomegaly. *South. M. J.* 25: 647-649, 1932.

based give promise of the ultimate development of additional methods of control for the entire group of rickettsial diseases, since the identification of immunologically different species constitutes the initial step in the exploration of immunizing vaccines.

BRIG. GEN. JAMES S. SIMMONS, U. S. Army: Rickettsial diseases are actually worldwide in distribution. It is highly appropriate to consider them in a symposium on tropical diseases. At the same time it should be emphasized that their greatest prevalence and most devastating outbreaks have occurred in the more northern regions of the world. Realization of the hazard of typhus to military personnel and civilian groups in war areas and possibly in this country was the basis of the conferences held in the Office of the Surgeon General in August 1942. One important outcome of these conferences was that the President, by executive order number 9285, dated 24 December 1942, established the United States of America Typhus Commission. The work of this commission under the Secretary of War is a joint enterprise of the Army, the Navy and the U. S. Public Health Service. Dr. Dyer has admirably summarized the progress that has been made in recent years in the differentiation of these diseases, in diagnostic methods and in measures for their control by prophylactic vaccination and by the application of new insecticides. There is little to be added to his remarks except by way of amplification from Army experience. The new type Cox vaccine appears to be highly effective. All troops going to typhus areas are vaccinated against typhus. Thus far there have been fewer than 50 reported cases of louse borne typhus in American troops. All these cases have been mild and there have been no deaths. Vaccination against typhus does not prevent infection, but it does modify the disease. The experience of the U. S. A. Typhus Commission accords with this. The advance in the discovery and use of new and effective insecticides has been great, particularly during the years of the war, since 1941. In fact the gains made by military applications of new insecticides against the vectors of insect borne diseases are certain to stand out as some of the most important contributions to the public health and welfare that have been made in recent years. Tsutsugamushi disease, "scrub typhus" or mite borne typhus, regarded formerly by workers in this country as a curiosity, has assumed great military importance because of its prevalence in the Southwest Pacific area and in the China-Burma-India theater of operations. Investigative teams have been sent to those areas to study the disease, its mode of transmission and the mite vector, and to find better methods of prevention. Dimethyl phthalate and other repellents have been found to be effective against *Trombicula*. Epidemiologic data have been collected from observations of troops in the field. Strains of the causative rickettsia have been brought back to this country for study in several laboratories. From the intensive investigations now being made on tsutsugamushi fever definite and beneficial advances are confidently anticipated.

Diseases Observed in Miners in the Sixteenth and Seventeenth Centuries.—Toward the close of the 16th century and during the early part of the 17th century scattered observations on certain diseases affecting miners had been made by various physicians. Gabriele Fallopius (1523-1562), in his treatise *De Metallis et Fossilibus*, noted that the workers in quicksilver mines suffer from mercury poisoning and that the majority of the miners remain at this work for barely three years. Andrea Mattioli of Siena, a contemporary of Fallopius, observed chronic mercurialism among the miners of quicksilver at Idria, in Carniola. Pieter van Forest (1522-1597) of Delft also made similar observations. J. B. van Helmont (1577-1644), the follower of Paracelsus, in his treatise on asthma and cough, *De Asthmate ac Tussi*, referred to a variety of asthma peculiar to miners and metal workers. According to Ramazzini, he described "a certain kind of asthma, between the dry and the moist species, which . . . is common among the diggers and refiners of metal, the minters of money, and such other workmen by reason of a metallic gas sucked in along with the air, and which stuffs up the vessels of the lungs."—Rosen, George: *The History of Miners' Diseases*, New York, Schuman's, 1943.

HEREDITARY SUSCEPTIBILITY IN RHEUMATIC FEVER

THE POTENTIAL RHEUMATIC FAMILY

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NEW YORK

At the present time rheumatic fever holds a prominent place in medical discussion and investigation. It is generally agreed that, although the nature of the disease is obscure, susceptibility of the host is the primary factor in the development of rheumatic fever. That this susceptibility is on an age and genetic basis is supported by considerable evidence.¹

For more than fifty years there has been a widespread clinical impression that heredity is a significant factor in the observed concentration of rheumatic fever in certain families. This belief was based in large measure on the observed familial incidence of the disease. Recent family studies have been in accord with this observation.²

Since familial concentration is commonly observed in contagious, dietary and parasitic disorders, a disease may not be considered hereditary on the basis of a high familial incidence alone. Nonhereditary factors must be excluded, and the operation of hereditary factors must be demonstrated by adequate genetic analysis. Genetic and epidemiologic studies have shown that the primary factor responsible for the familial concentration of rheumatic fever is hereditary susceptibility. In a series of rheumatic families studied it was found that the distribution of cases followed the general laws of inheritance. Furthermore, the frequency of cases was consistent with recessive mendelian inheritance.³

These studies were limited to a clinic population in New York City. They indicated that, if environmental factors such as climate, living conditions, diet or bacterial agents were responsible for the onset of rheumatic fever in susceptible children, they were uniformly operative and available. It was found that the number of age-genetic susceptibles estimated in every calendar year over a twenty year period of observation was in close agreement with the number of onsets observed. It was also demonstrated that the intrafamilial pattern of spread of rheumatic fever did not exhibit the usual characteristics of a communicable disease. One case did not constitute an obvious risk for secondary cases in the family. Age susceptibility appeared to determine the time of occurrence of cases in the family. It is important to emphasize that, although the number of genetic susceptibles estimated in these families was found to be in close agreement with the final number of cases observed, it cannot be concluded that every genetically susceptible child will necessarily develop rheumatic fever.³

The implications of these observations are apparent. The responsibility of the family physician, pediatrician, cardiologist and clinic is not limited to the medical

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1. Wilson, M. G., and Schweitzer, M. D.: Rheumatic Fever as a Familial Disease, *J. Clin. Investigation* 16: 555, 1937. Wilson, M. G.: Rheumatic Fever, New York, Commonwealth Fund, 1940, chapter 3, pp. 21-55. Paul, J. R.: The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects, New York, Metropolitan Life Insurance Company Press, 1943.

2. Cheadle, W. B.: The Various Manifestations of the Rheumatic State as Exemplified in Childhood and Early Life, London, Smith Elder & Co., 1889.

3. Wilson, M. G.; Schweitzer, M. D., and Lubschetz, R.: The Familial Epidemiology of Rheumatic Fever: Genetic and Epidemiologic Studies, *J. Pediat.* 22: 468 and 581, 1943.

supervision of the rheumatic patient. A complete family history and adequate physical examination of every member of the family are advisable. When it is ascertained that one is dealing with a potential rheumatic family, instructions as to the nature of the disease and its protean manifestations should be given. Until specific preventive measures have been developed, potential susceptibles should be protected from all known predisposing factors which appear to play a role in the onset of the disease. Since the individual susceptible cannot be identified, all the children in a rheumatic family should be under medical supervision. In recessive inheritance eugenic principles are not applicable, unless perhaps in instances when both parents are rheumatic.

If susceptibility to rheumatic fever is transmitted as a recessive character, the chance for each child (in a family or group of families) to be susceptible may be expressed as follows: If both parents are rheumatic, nearly every child will be susceptible. If one parent is rheumatic and the other parent is nonrheumatic but a carrier, i. e. rheumatic fever is present among the immediate family, each child has a 50 per cent chance to be susceptible. If neither parent is rheumatic but both parents are carriers, each child has a 25 per cent chance to be susceptible. (If at least one child is rheumatic, it may be assumed that the negative parents are carriers.) If one or both parents are negative, i. e. definitely known to be nonrheumatic and noncarrier, susceptible children would be unlikely.*

The preceding figures may be used to estimate the number of genetic susceptibles present in a family when the genetic constitution of the parents with respect to rheumatic fever is known. If at least one child is known to be rheumatic, the number of genetic susceptibles present in a series of such families may be estimated. Genetic factors have been established which facilitate computation of the number of susceptibles present. It is merely necessary to tabulate the series of families according to family size and multiply each group of families of given size by the appropriate genetic factor. These estimates may then be compared with the actual number of cases of rheumatic fever present in the series.

It is generally believed that the incidence of rheumatic fever is lower in certain sections of the country and infrequent among children of the more favorable economic groups in all sections. Estimation of the role of certain environmental factors may best be made by using the family as the unit for genetic study. For example, if the mortality rates published by the Bureau of Census⁵ reflect the relative prevalence of rheumatic fever in various localities, it would be expected that in family studies in certain mountain states where the mortality rate is high there would be close agreement between the number of susceptibles estimated and the number of cases of rheumatic fever actually observed. Similarly, in the south Atlantic states, where the mortality rate is reported to be low, it might be expected that there would be a disparity between the number of susceptibles estimated and the number of cases observed. Such comparisons, made on data accumulated from different geographic locations and diverse economic

groups, should yield significant information as to the role of climate and environment in this disease.

Of practical importance is the opportunity afforded for evaluating preventive and therapeutic procedure by making a careful genetic selection of families. Since nearly all the children in families where both parents are rheumatic are probably susceptible to rheumatic fever, even a small series of such families would provide a critical experimental group for study. Recognition and observation of the potential rheumatic family offer a promising field for future research in rheumatic fever.

CONCLUSIONS

1. The responsibility of the family physician, pediatrician, cardiologist, clinic and school physician is not limited to the medical supervision of the rheumatic patient.

2. The potential rheumatic family should be identified and kept under medical supervision.

3. Studies of potential rheumatic families in different geographic localities and diverse economic groups should yield significant information as to the role of climate and environment in the development of rheumatic fever in susceptible individuals.

4. The public health approach to the control of rheumatic fever, like tuberculosis, may profitably begin with the potential rheumatic family.

CAUSE AND TREATMENT OF FURUNCULOSIS

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The cause of furunculosis is obscure. External spread of bacteria from existing infections to nearby hair follicles is an obvious factor as many writers have pointed out, but that consideration alone does not account satisfactorily for the refractory nature of the disease and its tendency to relapse. Many other causes of furunculosis have been suggested, therefore, such as insanitary personal habits or surroundings, anemia, hypoproteinemia, debility, fatigue, low general or local resistance to the infection, hyperglycemia, low metabolic rate and internal foci of infection. Reflecting this uncertainty of causation, a host of therapeutic measures has been recommended and used for furunculosis, but not one of them has proved uniformly successful.

Certain characteristics of furunculosis point definitely to a local cause for the disease rather than to any systemic abnormality. Furunculosis usually starts with a single infection; thereafter boils tend to appear in succession and not simultaneously in a single crop, as might be expected in a blood borne infection. Furthermore, the individual furuncles invariably begin in hair follicles or their associated sebaceous glands. The lesions are nearly always limited to a region of the body, and extension of the involved area tends to be from the center of that region peripherally. When relapses occur, the infections appear as a rule in the original region. Organisms cultured from different furuncles in the same individual are identical. Not infrequently furunculosis occurs in previously healthy persons in whom no systemic abnormality can be demonstrated. Even during the height of furunculosis, blood culture is almost always negative. These con-

4. Because of the small size of human families the disease may not be expressed, even though the trait may be present in the family line. One might estimate the probable chance for a susceptible child to be about 3 per cent when one or both parents are negative.

5. Deaths from Acute Rheumatic Fever and Chronic Rheumatic Diseases of the Heart by Age and Race, Each State, 1941, Vital Statistics, Special Reports, United States Department of Commerce, Bureau of the Census, Aug. 18, 1943, vol. 17, No. 31.

*From the Department of Surgery, University of Utah School of Medicine.

siderations and a study of the bacteriology of the skin have led to the belief that a local spread of infection is sufficient to account not only for the features just listed but for the characteristic chronicity of the disease as well. Constitutional defects associated with furunculosis are thought to be contributory, secondary or coincidental.

It has been shown¹ that cutaneous bacteria are of two sorts, transients and residents. Transient or contaminating bacteria are loosely attached to the skin surface and are rather easily removed or killed. The resident flora, normally composed of bacteria of slight pathogenicity, is surprisingly stable; it may remain unchanged quantitatively and qualitatively for months or years. This resident flora can be removed or killed only with great difficulty. It is equally difficult to eradicate any particular type of organism which may be included in such a flora. In some way not fully understood certain contaminating bacteria, after prolonged contact with the skin, may change status and become residents. It is thought that, in furunculosis, discharges from the initial lesion carry infectious organisms to the surrounding skin and some of these pathogenic bacteria become incorporated into the resident flora of that region. There they live and multiply, perhaps without harm to the patient until by chance some of them are rubbed deeply into a hair follicle, whereupon a new furuncle starts. With each succeeding furuncle the skin of the region becomes more widely and heavily seeded with the offending bacteria. The fact that these organisms can become part of the resident flora, can live on the skin for long periods of time and are eradicated with great difficulty explains plausibly why furunculosis is so persistent despite local and systemic treatment, and why relapses so often occur in the original site.

Although metastatic infection in bones, kidneys and other distant points is not a rare complication of furunculosis, it occurs in a relatively small proportion of cases. It is probable that pressure, squeezing, incision or other trauma to furuncles produces a transient bacteremia, which in turn results in metastatic abscesses. In my opinion that is an exceptional mode of spread of infection in furunculosis, whereas the usual method of extension is by discharges, sweat, bathing and friction which smear the pathogenic organisms over the skin surface.

If the line of reasoning just presented is correct, rational treatment would consist primarily of an attempt to sterilize the skin of the whole contaminated region. If that could be accomplished, no new furuncles would occur. The word "sterilize" is used here advisedly, since there is reason to believe¹ that pathogenic bacteria in the resident cutaneous flora are no easier to remove or kill than the nonvirulent bacteria which usually predominate on the skin. Any such attempt to sterilize the skin should be carried out without injury to the tissues. And, if possible, subsequent contamination of the area with the same organism should be prevented.

Experimental studies² and abundant clinical experience prove that this desired effect cannot be achieved by application of iodine or other strong skin disinfectants. It has been found,³ however, that healthy skin can

be thoroughly degermed with a solution of ethyl alcohol exactly 70 per cent by weight. This particular preparation is a very efficient germicide which does not damage healthy skin even after long contact. Theoretical calculations, based on quantitative studies of skin disinfection, indicate that continuous application of this solution with gentle gauze friction for about twenty minutes will completely sterilize the surface of normal skin. Such treatment should not be used, of course, on open wounds, nor can it be expected to disinfect draining sinuses or hair follicles already deeply contaminated with a boil-producing organism. The optimum time to employ this treatment, therefore, is in the interval between the healing of the last furuncle and the onset of the next one.

In the last ten years many patients with furunculosis have been treated in the manner just described. Eleven of these cases have met the following criteria, and they form the basis of this report: (a) All 11 patients had true furunculosis; that is, a more or less continuous succession of deep-seated boils occurring over a period of several weeks or months. (b) All had been treated unsuccessfully by other methods. (c) All were treated personally by me in accordance with the principles outlined. (d) All were followed for two or more years after the alcohol treatment. In all the cases there was complete and usually sudden cure of the condition. And in none of them has there been any recurrence of furuncles during the period of observation.

REPORT OF CASES

The following case histories are typical:

CASE 1.—M. R., a woman aged 30, had been more or less incapacitated by boils on her legs for eight months. Many remedies, including vaccines, yeast, tin, x-rays, chemotherapy and various local applications, had been tried. The infections always began as deep-seated painful indurations, which worked their way slowly to the surface with almost no pus but with necrotic centers which eventually came away, leaving deep craters and relatively large scars. Each boil lasted two to four weeks. They occurred singly and in crops of three or four. Culture showed *Staphylococcus aureus*. The extremities were unusually hairy. There was no evidence of constitutional disease; the blood sugar and the basal metabolic rate were normal.

Seizing an opportunity when the latest boil had stopped discharging and no fresh ones could be seen, I washed both extremities from the hips to the ankles continuously for twenty minutes with freshly prepared 70 per cent (by weight) alcohol, using light gauze friction. The patient, followed for four years, had no further furuncles.

CASE 2.—M. C., a girl aged 10 years, had not been free from boils for over four months. The infections were scattered over the lumbar region, buttocks and backs of the thighs. Each boil began as a small, rather tender spot followed by a deep, painful induration, a necrotic head, a deep crater and slow healing. Many sorts of treatment had been tried without apparent benefit.

Utilizing a favorable opportunity when a crop of furuncles was subsiding, I placed the patient prone, the genitalia and anus were protected with a heavy coat of petrolatum and the entire infected area was washed with 70 per cent alcohol solution for thirty minutes. No more furuncles appeared, and the patient remained free from them thereafter for at least three years.

CASE 3.—R. C., a boy aged 9 years, had had boils in the region of the right knee for five weeks. When I first saw him 21 healing furuncles and recent scars were counted in an area of about 7 by 4 inches, and a crop of 6 new boils were starting, none of which had come to a head. The boy could not walk because of the pain.

An attempt was made to sterilize the skin at that stage in the manner already described, but evidently it became rein-

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2. Price, P. B.: New Studies in Surgical Bacteriology and Surgical Technique, with Special Reference to Disinfection of Skin, *J. A. M. A.* **111**: 1993 (Nov. 26) 1938.

3. Price, P. B.: Ethyl Alcohol as a Germicide, *Arch. Surg.* **38**: 528 (March) 1939.

fects with discharges from the six new boils, for subsequently there were additional furuncles and superficial pustules. It was necessary to await a time when the active infections had subsided but before any new infections had started. Such an opportunity presented itself within three weeks. The area was then washed with 70 per cent alcohol for twenty minutes, and this treatment was followed by a complete and permanent relief.

CASE 4.—C. L., a man aged 32, had numerous painful furuncles on the neck, right cheek and chin for sixteen weeks. He had received several x-ray treatments besides local applications of various sorts, staphylococcus toxoid injections and a course of sulfonamide therapy. Zinc iontophoresis was used successfully for some of the infections near the lip.

The long stubble of beard was carefully trimmed away with scissors, and the region was washed gently with 70 per cent alcohol for twenty-five minutes. No more furuncles appeared, and the patient remained free from them for at least three years.

COMMENT

No claims are made for this method of treatment. The number of cases in which it has been used is too small to warrant any final conclusions as to its efficacy. My purpose in this communication is to present a rational theoretical basis for such a treatment together with the results which have been observed to date. It is hoped that wider use of the method will lead to an accurate assessment of its value.

It is important that the alcohol solution should be prepared properly if full disinfectant action is to be obtained. A full discussion of the important differences between percentages by volume and by weight, and directions for preparing 70 per cent alcohol by weight, have been published elsewhere.²

The germicidal action of alcohol on the skin is increased by friction, but in the presence of furunculosis rubbing is not without danger. Vigorous massage, particularly when directed against the normal inclination of hair shafts, may actually do harm by pushing live bacteria into hair follicles.

After prolonged application of alcohol the skin feels dry and may itch slightly. Patients should be cautioned not to rub or scratch the region. It is advisable to powder the disinfected area with sterile talcum or zinc stearate. Calamine lotion may be used in selected cases.

It is reasonable to suppose that in the production of furuncles infectious bacteria are first deposited superficially in hair pits, and that they are carried slowly toward the roots of the hairs by natural processes of reproduction and invasion, aided by rubbing, scratching and squeezing on the part of the patient.

I am among those who advocate nonoperative treatment of individual furuncles. Ordinary boils should seldom be incised even when fluctuation is observed but should be permitted to rupture spontaneously. Sinuses should not be dilated and drains should not be inserted. Evacuation of contents by pressure is both unnecessary and dangerous. The temptation to pick out a necrotic core is to be resisted. Cautics such as iodine and phenol applied to a furuncle or its surrounding skin are apt to do more harm than good. During the period of development furuncles may be treated with hot compresses, but they may do equally well if left strictly alone. Rest is important. Just before rupture a sulfathiazole paste dressing may be applied, and this treatment can be used to advantage during the period of discharge. I have had no experience with penicillin, aspergillin and allied compounds in the topical treatment of furunculosis.

It is too early to assess accurately the value of sulfonamides, or of penicillin and related compounds, in the systemic treatment of furunculosis. My impression is that sulfonamides have not been very successful when used for this purpose.

SUMMARY

Regional contamination of the resident flora of skin with boil-producing bacteria is postulated as the primary cause of furunculosis. With that as a working hypothesis a method of treatment has been devised which attempts to eradicate all the offending organisms from the involved area. Eleven patients with furunculosis so treated have had prompt and permanent relief.

OUTBREAK OF SEPTIC SORE THROAT DUE TO RECONSTITUTED POWDERED MILK

EPIDEMIOLOGIC OBSERVATIONS

LIEUTENANT RALPH F. ALLEN (MC), U.S.N.

AND

LIEUTENANT LOUIS S. BAER (MC), U.S.N.R.

It is well known that most epidemics of septic sore throat are traceable to contaminated raw milk. This, we believe, is the first such outbreak caused by milk from a contaminated "mechanical cow" to be recorded in the literature. As this machine is being widely used to supply our armed forces with fluid milk and ice cream, medical officers should be cognizant of the danger inherent in its improper operation.

CHRONOLOGY OF THE EPIDEMIC

The outbreak studied by us can best be visualized by referring to figure 2, which shows the total number of cases according to the date of onset of symptoms. A total representing approximately 10 per cent of the complement of the station were sick.

A careful inspection of the galley and food handlers was made when it became apparent that an epidemic was starting. Defects noted in the dairy room and preliminary case cards filled out on the first group of patients made it seem probable that milk was the source of the infection, and advice to discontinue its serving was given on the morning of September 30. A rapid subsidence of the outbreak followed compliance with this advice.

Further steps taken to control the outbreak were daily examination of all mess cooks, eliminating those with sore throats. The others were given 1.5 Gm. of sulfadiazine daily as prophylaxis against air borne spread of the disease. As further precaution against upper respiratory spread among the personnel at large, the swimming pool and movie were closed. No other measures were employed.

EPIDEMIOLOGIC EVIDENCE INCRIMINATING MILK

1. Air borne spread was ruled out by lack of correlation between place of work or sleeping quarters and incidence of sore throat.

2. The swimming pool was exonerated, for only 7 per cent of those sick had been swimming in the seventy-two hours preceding the outbreak.

Technical assistance was rendered by J. D. Andrews, PhM 1/c, D. A. Treat, PhM 2/c, J. R. Cook, PhM 2/c, and H. L. Oster, PhM 2/c. This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

3. The general mess was indicated as the source, because 100 per cent of the patients had eaten at the mess, whereas several large groups of personnel on the base eating at other messes were not sick.

4. Milk was the only article on the menu statistically significant. Of the first 100 patients admitted to the sick list, 100 gave a history of drinking milk. No other food could be similarly incriminated. Furthermore, inspection of the dairy revealed defects which could easily have allowed the serving of contaminated milk.

BACTERIOLOGIC EVIDENCE OF SOURCE OF INFECTION

A total of 155 throat cultures were made. When samples of these were cultivated on blood agar pour plates they proved to be practically pure cultures of

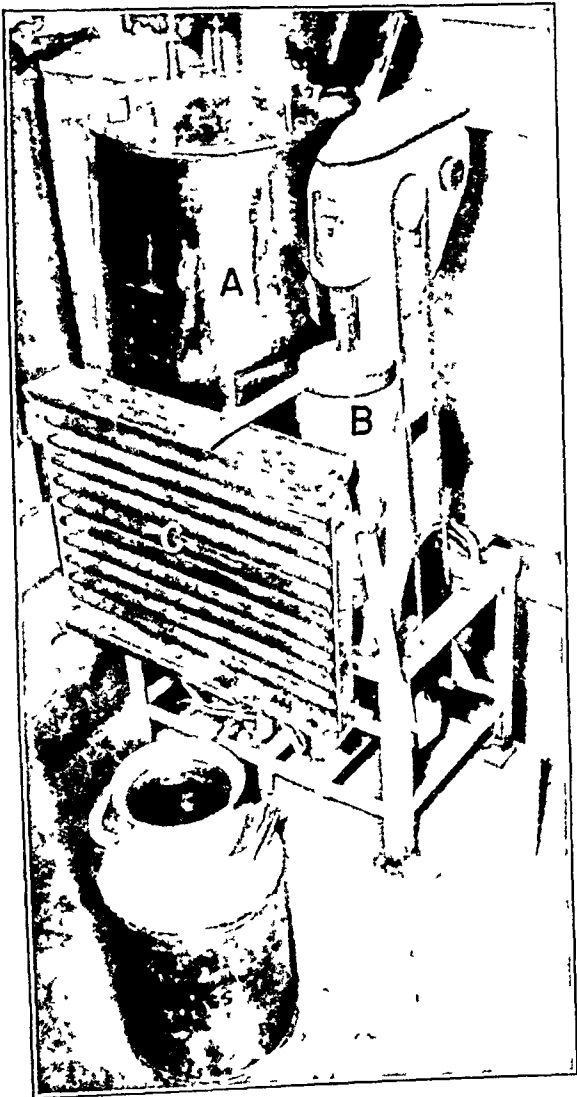


Fig. 1.—Design and operation of the mechanical cow, which is made in 10, 20 and 40 gallon sizes. The required amount of water is placed in the mixing tank (A) and heated to 80 F. by allowing live steam to enter the heating jacket surrounding the tank. Powdered dry milk is then sifted into the tank and the mixture agitated for five minutes. The temperature is then raised to 145 F. and held there for twenty minutes. Finally the required amount of sweet cream unsalted butter is added, the complete mixture is agitated for ten minutes while the temperature is kept at 145 F. and then the milk is passed through the high speed emulsifier (B). From here it is run over the cooler (C), the coils of which should be kept below 38 F. After cooling, the milk can be stored in a refrigerator until ready for use. The mechanical cow is manufactured by the United Dairy Equipment Company, West Chester, Pa.

beta hemolytic streptococci (fig. 3). Three of these cultures picked at random were further identified as belonging to group A as determined by the Lancefield precipitin method. Equipment for Griffith subtyping was not available. Cultures from the milk and scrapings from the mechanical cow showed beta hemolytic streptococci.

ULTIMATE SOURCE OF INFECTION

There were two men assigned to work in the milk preparation room. One of them gave a history of having had a sore throat and a tender swollen gland in his neck two weeks before the outbreak. He suffered a recurrence of his sore throat during the epidemic. In spite of the fact that his throat culture was positive for beta hemolytic streptococci, one cannot be certain of the nature of the organism causing his previous sore throat or whether or not he was a carrier.

RELATIONSHIP OF PREVIOUS TONSILLECTOMY TO THE MORBIDITY RATE

From the accompanying table it is apparent that there is a positive correlation between the presence of tonsils and one's chances of getting septic sore throat during the course of a milk borne

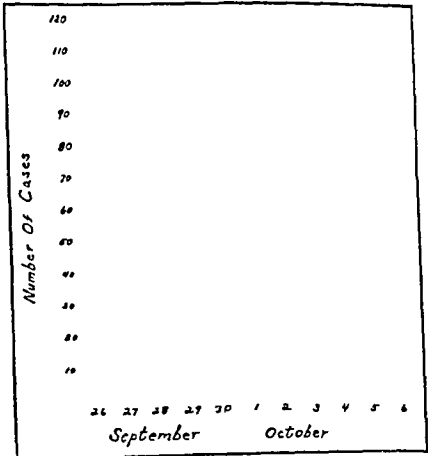


Fig. 2.—Morbidity totals by date of onset. Dispensing of milk was stopped on September 30.

Relation of Illness to Presence of Tonsils

	Sick	Not Sick
Tonsils in	77%	56%
Tonsils out	23%	44%

epidemic. The probability that such a distribution could occur by chance as calculated from the formula

$$X^2 = \frac{(ad - bc)^2 (a + b + c + d)}{(a + b)(c + d)(a + c)(b + d)}$$

is less than one in fifty.

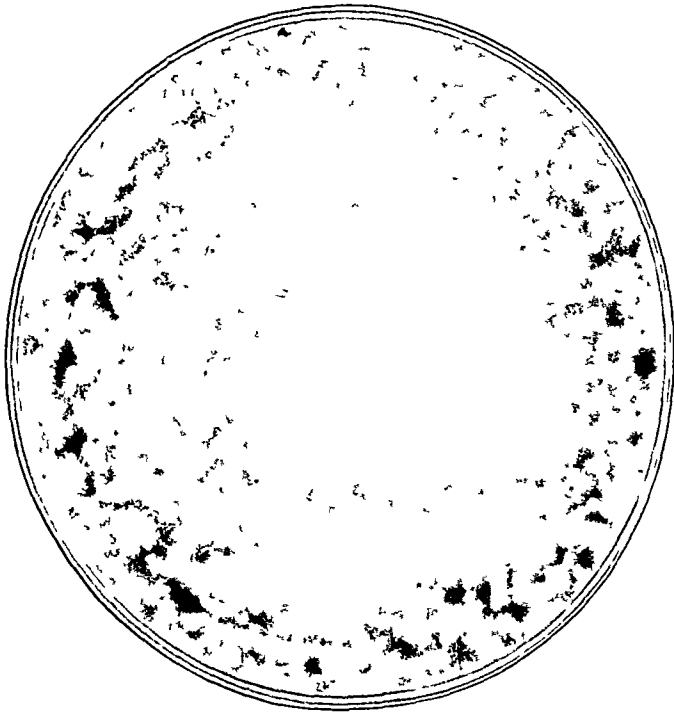


Fig. 3.—Culture of beta hemolytic streptococci

COMMENT

The chief value of an article such as this is to indicate a new source of danger to the health of military personnel and to recommend means of avoiding this danger

in the future. Based on our experience, the following suggestions are made for the benefit of medical officers at stations or on ships using the "mechanical cow."

1. Foremost in importance is careful instruction of enlisted personnel operating the machine and continued close supervision of their work.

2. Sufficient men should be assigned to the job and an adequate number of "mechanical cows" obtained to supply the needed quantity of milk without having to "railroad it through."

3. A thorough breakdown of the mechanical cow is necessary daily with careful scrubbing of all parts with alkaline washing powder followed by steam sterilization for at least one minute.

4. Weekly checks with a standard thermometer of both the pasteurizing and cooling temperatures is essential. A recording thermometer attached to the mixing tank of the mechanical cow is desirable.

5. Particular attention should be paid to keeping milk cans clean along the seams and prompt retinning of those that rust.

6. Careful screening and adequate ventilation are important and often overlooked items of sanitation.

7. Drying racks for the milk cans of approved construction are easily made and should always be used. Too often cans are placed upside down on the deck.

8. Bulkheads should be kept painted white to encourage cleanliness and expose dirt.

9. Frequent checks on the health of all milk handlers is an important duty of the medical officer.

Clinical Notes, Suggestions and New Instruments

DELAYED MORPHINE POISONING IN BATTLE CASUALTIES

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Early in November 1943 a curious and, as it turned out, a common phenomenon appeared in the operating tents of the forward hospitals: On arrival in the receiving ward the wounded men, many of whom were in shock, all of whom were thoroughly chilled, appeared no different from other such patients. On receiving shock therapy and eventually becoming warmed up, many of these men developed profound respiratory depression associated with pin point pupils, yet neither sign had been present before resuscitation, nor had morphine been administered since arrival in the hospital.¹ These patients clearly appeared to be suffering from morphine poisoning. In the absence of head wounds it was difficult to attribute the condition to anything else.²

FACTORS LEADING TO DELAYED TOXIC EFFECTS

Consideration of the circumstances offered a probable explanation for them. In the first part of November it was cold in the valley of the Volturno. It rained, and snow fell low on the mountain sides. If a man was not wet and chilled before being wounded he soon became so after he fell, with the result that the circulation of his skin and subcutaneous region was greatly reduced if not altogether stopped.

The surgeon, North African Theater of Operations, U. S. Army, and the surgeon, Fifth Army, gave the author the opportunity to observe and report these findings.

Major Beecher is consultant in anesthesia and resuscitation, North African theater of operations; professor of anesthesia, Harvard Medical School, on leave, and anesthetist-in-chief, Massachusetts General Hospital, Boston, on leave.

1. A similar observation in civil practice (Cocoanut Grove Disaster) is described by Beecher, H. K., *Resuscitation and Sedation of Patients with Burns Which Include the Airway*, *Ann. Surg.* 117: 825, 1943.

2. Alcohol, chloral hydrate and barbiturates can produce signs similar to those of morphine poisoning but were unlikely complicating factors in the present circumstances.

It was not likely that morphine administered subcutaneously under these circumstances would be absorbed. Apparently it was not, for in many cases no pain relief occurred following its use, and the first dose of $\frac{1}{2}$ grain (30 mg.) of morphine would be followed by a second or even a third injection over a period of hours, all of these causing little if any effect. In the case of men in good general condition, warming alone with restoration of an active peripheral circulation caused the rapid simultaneous absorption of all the unabsorbed deposits of morphine; in some cases this occurred many hours after the injections had been made. In men in shock, restoration of blood volume and blood pressure, followed eventually by warming, with renewal of the peripheral circulation, led to the seriously rapid absorption of all the morphine injected, and poisoning developed.

In some cases it was necessary to undertake operation before full resuscitation from shock had been accomplished. Here, either would at first stimulate respiration and then, as the characteristic peripheral vasodilatation occurred, morphine injected many hours before would be rapidly absorbed with development of pin point pupils and profound respiratory depression, before the surgical stage of anesthesia had been reached. In such cases induction of anesthesia was prolonged to nearly an hour.³

FREQUENCY OF OCCURRENCE OF THE PHENOMENON

It is impossible to estimate with accuracy the frequency of occurrence of the phenomenon. The complication varies in its manifestations from the hardly perceptible to the fatal. It is often severe enough to be troublesome or serious clinically. In the first ten days of November the syndrome was recognized and pointed out in several hospitals. On the 11th of November it was discussed at the weekly medical meeting of the Fifth Army. Subsequently the phenomenon was everywhere recognized and commented on. It has been found to be a common and at times a serious complication.

It should be emphasized that, although cold weather certainly increased the likelihood of the development of the accident, low blood pressure, surgical shock or any other condition leading to or associated with reduced peripheral circulation presents the possibility for development of the syndrome regardless of the weather. The condition is one to be anticipated in civilian as well as in military practice.

CLINICAL IMPLICATIONS

The clinical implications are concerned with the avoidance of possibility for the development of the syndrome: Whenever possible morphine should be administered intravenously in small doses, $\frac{1}{8}$ grain (8 mg.) to $\frac{1}{4}$ grain (10 mg.). The full effect is thus achieved in a few minutes, and no possibility for delayed absorption exists. After fifteen or twenty minutes the dose can be repeated if necessary. As a practical matter morphine can rarely be administered intravenously on the battlefield: the extra time required, the necessity for speed, the numbers requiring treatment during heavy action, the frequently collapsed veins of the wounded, the unskilled personnel administering the agent, the poor physical facilities—all of these factors may combine to make necessary the continued use of peripheral injections of morphine. In such cases the injection is made intramuscularly (not subcutaneously) and is followed by massage. The site of the injection is low enough on an extremity so that, if signs of poisoning subsequently develop, a tourniquet can be placed above the morphine deposit in order to slow down the absorption rate. The site of the injection, in addition to the time and size of dose, should be recorded on the man's tag.

When any possibility exists that large unabsorbed deposits of morphine may already be present in a patient, further morphine necessary is administered intravenously in small doses. In such cases morphine is best avoided in preanesthetic medication.

TREATMENT

Realization that morphine intoxication may have a rather abrupt onset many hours after the last morphine injection, under the circumstances discussed, is a considerable help in recognizing the problem at hand. Correct diagnosis leads to prompt and effective treatment. A tourniquet, intermittently loosened, is placed proximal to the site of injection. Primarily the treatment

3. Among other cases, two going on simultaneously in the same operating room showed this sequence, although the last morphine had been injected respectively seven and nine hours before.

of morphine poisoning consists in the effective prevention of anoxia. This is best accomplished by oxygen administration with artificial respiration (if necessary), easily carried out with the aid of a closed anesthesia apparatus by means of intermittent bag pressure, with carbon dioxide absorption. Atropine $\frac{1}{60}$ grain (1 mg.) intravenously is probably of value. Ephedrine $\frac{1}{2}$ grain (30 mg.) intravenously has some value as a central stimulant. It will help to support a falling blood pressure. Hypertonic dextrose intravenously is a good diuretic and aids in excretion of morphine by the kidneys. Body heat should be conserved. If coma develops, a gastric tube should be inserted to eliminate the possibility of aspiration of gastric contents. Moreover, frequent change of position is of value in reducing later appearance of pulmonary complications. The treatment is supportive, while the morphine overdose is largely destroyed in the body.

SUMMARY

When the peripheral circulation is sluggish or inactive, as it may be in patients who are chilled or who have low blood pressure, subcutaneous injections of drugs are poorly absorbed. This was frequently observed to be the case in the Italian campaign. Subcutaneous injection of morphine under such circumstances fails to relieve the pain of wounded men. Repeated injections, sometimes over a period of many hours, are not absorbed until finally by shock therapy and warmth the circulation is reestablished in the skin and subcutaneous regions. The unabsorbed deposits of morphine, often totaling a grain or a grain and a half, are then taken up by the active circulation so rapidly that signs of morphine poisoning previously not present then appear, as shock is overcome.

It is usually stated that wounded men require large doses of morphine, doses that may be dangerously large. It is probable that this clinical tradition had at least part of its basis in poor absorption of the morphine in cases such as these. Although the intravenous use of morphine is desirable and would eliminate the problem, such use is not ordinarily practicable under field conditions. In this case, intramuscular injection followed by massage is the choice.

CLOSED REDUCTION OF FRACTURED LUMBAR SPINE WITH UNILATERAL DISLOCATION

LIEUTENANT COLONEL H. B. JENKINS AND MAJOR CHARLES L. NEILL
MEDICAL CORPS, ARMY OF THE UNITED STATES

Fracture dislocations of the lumbar vertebrae are rare. According to Frazier and Allen¹ the infrequency of lumbar dislocations may be attributed to a number of anatomic factors. Unlike the cervical region, where dislocations are most common, there is a comparatively limited range of motion in the lumbar region; the bodies of the lumbar vertebrae are much larger in every dimension; the intervertebral disks are thicker and more elastic; the ligaments at this level of the spine have great strength, and finally—what is probably a factor of greatest importance—the articular processes interlock. These authors have stated that with one exception in all cases dislocations of the lumbar vertebrae have been either backward or forward. In the exceptional case, reported by Schmid,¹ a rotary dislocation is seen in roentgenograms with the second, or proximal, vertebra projected to the right 1.5 cm. beyond the third, or distal, vertebra and the alignment of the spinous processes not disturbed.

In more recent literature Adams² reported a case of unilateral dislocation of the fourth on the fifth lumbar vertebra in which there was forward displacement of the spine at the level of the fourth. Attempted reduction by closed manipulation was unsuccessful, and open operation was necessary to correct the deformity. The patient was able to resume normal activities six months later.

A case of fracture dislocation was reported by Barber³ in which the first lumbar vertebra was displaced laterally on

the second and there was considerable anterior displacement. Open operation was necessary to secure reduction. Barber referred to a case reported by Rogers as the only other instance in which open surgical reduction had resulted in satisfactory recovery.



Fig. 1.—A, anteroposterior view on admission; B, lateral view on admission. Photo by U. S. Army Signal Corps.

A severe crushing fracture of the second and third lumbar vertebrae, with complete lateral and pronounced downward displacement of the first and half the body of the second, was reported by Gordin.⁴ There was little evidence of injury to the cord or to the cauda equina, but open operation was done in an attempted reduction, and fragments of lamina, spinous processes and other posterior fragments of vertebrae were removed to prevent eventual pressure of cord or cauda equina due to callus formation. This patient made an excellent recovery with a 2 inch (5 cm.) shortening of the spinal column and side to side union. Six months after injury he was back at work as a laborer.

Böhler,⁵ in discussing the treatment of fracture dislocations in the lumbar region, stated that dislocations in the lumbar region could be reduced only by traction or in a bloody way by resection of the processes.

REPORT OF CASE

H. T. T., a white soldier aged 23, native of New York, with eight months' army service, was injured on Aug. 16, 1942



Fig. 2.—A, anteroposterior view after closed reduction; B, lateral view after closed reduction. Photo by U. S. Army Signal Corps.

when thrown from a truck. He landed on his feet but was knocked down by and pinned beneath the truck, which had

4. Gordin, A. E.: Severe Crushing Fracture of Vertebrae with Complete Recovery, *Am. J. Surg.* 38: 374 (Nov.) 1937.
5. Böhler, Lorenz: Wirbelbrüche und Wirbelverrenkungen; Einrichtung von schweren Verrenkungsbrüchen und von Verrenkungen der Wirbelsäule, *Chirurg* 7: 643 (Sept. 15) 1935.

From the Surgical Service of the Station Hospital, Camp Gordon, Georgia.

1. Frazier, Charles H., and Allen, Alfred Reginald: *Surgery of the Spine and Spinal Cord*, New York, D. Appleton & Co., 1918.
2. Adams, A. Wilfred: Fractured Lumbar Spine with Unilateral Dislocation, *Brit. J. Surg.* 25: 632 (Jan.) 1938.
3. Barber, C. Glenn: Open Surgical Reduction of Fracture Dislocation of the Lumbar Spine with Cord or Cauda Equina Involvement, *Am. J. Surg.* 52: 238 (May) 1941.

overturned. On his admission to the station hospital, Camp Gordon, Georgia, about one hour after the injury, his blood pressure was 116 systolic and 78 diastolic, pulse rate 110, respiratory rate 24 and temperature 98 F. Small lacerated wounds were noted over the right supraorbital region and on the right leg. There was a contused wound over the right iliac crest. There was a complete flaccid paralysis and loss of sensation below the level of the fourth lumbar root distribution on both sides. Roentgen examination revealed a 2 cm. lateral displacement to the left of the fourth lumbar vertebra on the fifth, with fracture of the right inferior articular facet of the fourth and the right superior articular facet of the fifth (fig. 1). After six hours there was slight improvement of sensory function on the left side, but complete loss of motor and sensory function persisted on the right. Eighteen hours after admission there was no further improvement in neurologic function.

With the patient under ether anesthesia on the x-ray table eighteen hours after the injury was incurred, four-man counter-traction on trunk and lower extremities was used, while two-man lateral counterpressure was exerted on the trunk and pelvis, with the fluoroscope being used for observing the reduction. With this manipulation the fourth lumbar vertebra was readily aligned, and a plaster spica was applied from the upper part of the thorax to the hips (fig. 2).

The following day pronounced improvement in sensory and motor function was noted. The patient was able to move

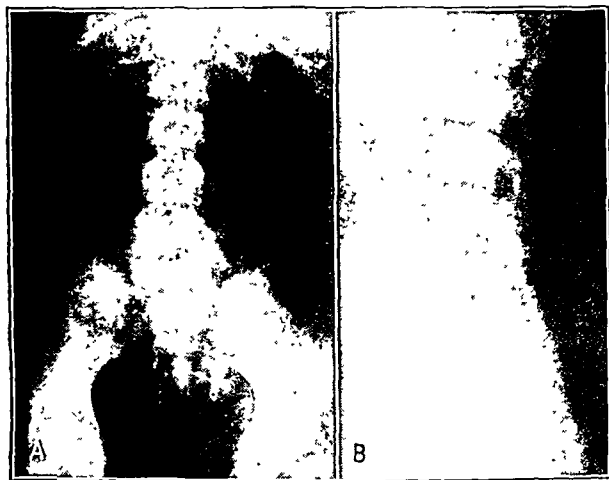


Fig. 3.—A, anteroposterior view five months after injury, B, lateral view five months after injury. Photo by U. S. Army Signal Corps.

both legs with good muscle power with the exception of the dorsiflexors of the right ankle. There was good touch sensation over both lower extremities, but pinprick sensation was dull over the lateral aspect of the right leg and foot. At the end of two months there were no residual sensory changes and the dorsiflexor muscles of the right ankle were functioning but still weak. There have been no further neurologic changes.

The patient was allowed to go home on a convalescent furlough of thirty days on Jan. 18, 1943, five months after his injury (fig. 3). He was discharged to duty on May 1, 1943, but owing to the weakness of the dorsiflexor muscles of the right foot he was reclassified to limited duty. He now walks without apparent limp, does not have any pain or impairment of movement of the back and has been on continuous active duty as a clerk in the hospital since his discharge as a patient.

SUMMARY

A case of unilateral fracture dislocation of the fourth on the fifth lumbar vertebra without anterior or posterior displacement and with injury to the cauda equina was observed. No similar case has been encountered in the literature. Closed reduction was effected by manipulation, and the patient has resumed his duties as a soldier. A great force is necessary to produce a dislocation in this region, where the structural support of ligaments, muscles and bone is the strongest of any region of the vertebral column.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL ON PHARMACY AND CHEMISTRY IS FREQUENTLY ASKED TO CONSIDER FOR ACCEPTANCE SOAPS WITH CLAIMED ANTI-INFECTION ACTION. USUALLY THE CLAIMS FOR BACTERIOSTATIC AND BACTERICIDAL VALUE ARE BASED ON SOME INGREDIENT INCORPORATED IN THE SOAP, OCCASIONALLY ON THE OILS AND FATS USED TO PREPARE THE SOAP. MOST OF THE EVIDENCE THAT HAS BEEN PRESENTED TO THE COUNCIL ON BEHALF OF EACH SUBMITTED ARTICLE HAS BEEN LACKING MANY DETAILS WHICH WOULD PERMIT ADEQUATE EVALUATION. WITH THIS THOUGHT IN MIND THE COUNCIL PROPOSED THAT A REPORT BE PREPARED TO PRESENT THE STATUS OF "ANTI-INFECTION" SOAPS WITH THE HOPE THAT IN THE PREPARATION CRITERIA WOULD BE SET UP FOR THE GUIDANCE OF MANUFACTURERS AND ALL OTHERS INTERESTED IN THIS SUBJECT. ACCORDINGLY, HARRY E. MORTON, Sc.D., DEPARTMENT OF BACTERIOLOGY, UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, HAS UNDERTAKEN AN EXHAUSTIVE REVIEW OF THE INFORMATION THAT IS AVAILABLE ON THE GERMICIDAL ACTION OF SOAPS AND HAS CARRIED OUT MUCH ORIGINAL INVESTIGATION; HIS FINDINGS ARE REPORTED BELOW. AT THE CONCLUSION OF DR. MORTON'S WORK DR. JOSEPH V. KLAUDER, PHILADELPHIA, MADE FURTHER STUDIES AND REPORTS THEM IN A DISCUSSION OF DR. MORTON'S INVESTIGATIONS. THE COUNCIL EXPRESSES ITS APPRECIATION OF THE ASSISTANCE PROVIDED BY DR. MORTON AND KLAUDER AND HOPES THAT THIS REPORT WILL BE OF SOME INTEREST TO, AMONG OTHERS, THE SURGEON, THE INDUSTRIAL PHYSICIAN AND THE DERMATOLOGIST.

AUSTIN E. SMITH, M.D., Secretary.

"GERMICIDAL" SOAPS

I. THE IMPORTANCE OF A CLEAN SKIN, THE ACTION OF SOAPS IN FREEING THE SKIN OF VIABLE MICRO-ORGANISMS, AND METHODS FOR TESTING THE EFFICIENCY OF GERMICIDAL (MEDICATED) SOAPS

The skin not only serves as a mechanical barrier to the entrance of micro-organisms into the body but, according to some investigators, also exerts a lethal action toward many bacteria. Arnold, Gustafson, Hull, Montgomery and Singer¹ in 1930 demonstrated that micro-organisms making up the exogenous bacterial flora of the skin, referred to by Price² as "transients," are readily destroyed by the skin. The destruction of those micro-organisms comprising the endogenous flora, or "residents," as Price² calls them, is not as great. The destruction of *Serratia marcescens* (*Bacillus prodigiosus*) by the skin on the backs of 13 healthy young adults varied from 89 to 99.7 per cent after an exposure of ten minutes. In addition to *Serratia marcescens*, *Escherichia coli*, *Eberthella typhosa*, *Salmonella enteritidis* and *Pseudomonas aeruginosa* (*Bacillus pyocyaneus*) were readily destroyed by the skin on the palmar surface of clean hands; *Staphylococcus aureus*, *Staphylococcus albus* and *Staphylococcus epidermis albus* were destroyed more slowly. Colebrook³ likewise observed that hemolytic streptococci, *Proteus vulgaris*, *Klebsiella pneumoniae* (Friedländer's bacillus) and *Escherichia coli* rapidly decreased in number when applied to the skin of a finger.

Arnold and his associates¹ pointed out the importance of clean skin to the self-disinfecting power of the skin. They tested the hands of workmen (electricians and plumbers) before and after washing and cleansing their hands at the end of the day for the ability of the skin to destroy *Salmonella enteritidis*. Dirty skin had very little destructive action on the test organism, whereas, after washing the hands, there was rapid destruction of *Salmonella enteritidis*. In the study of hemolytic streptococci in normal persons and in carriers, Hare⁴ discovered the organisms on

1. Arnold, L.; Gustafson, C. J.; Hull, T. G.; Montgomery, B. E., and Singer, C.: The Self-Disinfecting Power of the Skin as a Defense Against Microbe Invasion, *Am. J. Hyg.* 11: 345-361, 1930.

2. Price, P. B.: The Bacteriology of Normal Skin: A New Quantitative Test Applied to a Study of the Bacterial Flora and the Disinfectant Action of Mechanical Cleansing, *J. Infect. Dis.* 63: 301-318, 1938.

3. Colebrook, L.: Ministry of Health Interim Report of Departmental Committee on Maternal Mortality and Morbidity: Appendix D. Memorandum on the Sterilization of the Hands, London, His Majesty's Stationery Office, 1930, pp. 122-135.

4. Hare, R.: Haemolytic Streptococci in Normal People and Carriers, *Lancet* 1: 85-88, 1941.

the legs of 96 male students in only 7 instances. Of 16 persons who had no hemolytic streptococci on the skin of the legs, 4 acquired the organisms on an area of the skin purposely left unbathed, 3 during the first week and the fourth after the second week, thus emphasizing again the importance of cleanliness for the normal self-disinfecting power of the skin.

Yeast cells as well as bacteria were found to be removed from the surface of the skin by Cornbleet and Montgomery.⁵ Moist areas suffer a depression of their sterilizing powers, and areas with denuded epithelium are not as efficient as intact areas in removing yeasts and staphylococci.

Arnold and his associates¹ noticed that the self-disinfecting power of the skin varied somewhat with different regions of the body, as did Cornbleet and Montgomery.⁵ The skin in the nail region of the tips of the fingers was poorer in its self-disinfecting power than the skin on the palmar and dorsal surfaces. There was a slight but constant difference in the self-disinfecting power of the skin on the palmar and dorsal surfaces of the hand (Karns and Arnold⁶). Fisher⁷ reported that there was a decided drop in the self-disinfecting power of the skin on the hands of some women during the menstrual cycle.

Many workers have observed that micro-organisms, such as staphylococci, commonly found in the endogenous bacterial flora of the skin often increase in number during washing with soap and water. In a recent article Arnold⁵ states that the cornified layer of the skin behaves like a colloidal gel structure; increase in water content causes an increase in the surface endogenous flora, while dehydration is associated with a decrease in the viable bacteria. The flora returns to the normal density when the cornified layer readjusts itself. The endogenous bacterial flora can be increased by alkalinization and by exposure to warm water and to warm humid air. It can be decreased by exposing the skin to acid. A cornified layer with increased water content permits exogenous bacteria to survive for longer periods of time; a dehydrated layer rapidly renders the bacteria nonviable.

The only results at variance with the numerous works cited are those of Norton and Novy.⁹ The latter workers noticed that the number of bacteria (*Serratia marcescens*) rapidly diminished after application to the skin. The effect was particularly noticeable during the first ten minutes. Similar results were obtained with inert materials such as glass slides, filter paper and tanned hide. The authors concluded that the most important factor involved was moisture and that living skin did not show any inherent germicidal power. Colebrook³ attempted to rule out the effect of drying by making comparable tests with broth cultures of various organisms swabbed on fingers and test tubes. Colebrook's results show much less killing of the test organisms on test tubes than on fingers, but the conditions of the tests are not strictly comparable and more and better work could be done profitably concerning this important point.

II. THE ACTION OF SOAPS IN FREEING THE SKIN OF VIABLE MICRO-ORGANISMS

In addition to the esthetic reasons, it has been shown in the preceding section that cleanliness is important for the function of the apparent normal self-disinfecting power of the skin. Soap is usually employed in cleansing the skin because of the readiness with which it removes visible dirt. One of the methods by which soap acts as a detergent is the physical removal of foreign matter, including micro-organisms, owing to its low surface tension. In addition to this physical action, chemical actions may be at work as well. In 1925 Walker¹⁰ stated that the thorough washing of the hands with the formation of a good lather with any ordinary soap was sufficient to destroy any adhering diphtheria bacilli, streptococci and pneumococci. Typhoid bacilli were affected to a lesser extent, and *Staphylococcus aureus* possessed a pronounced resistance (Walker¹¹). The activity of the soap was greatly enhanced by raising the temperature.¹² Colebrook and Maxted¹² in 1933 found that *Streptococcus pyogenes* was very susceptible to the action of yellow household soap and that staphylococci and *Escherichia coli* were little affected. Meningococci and gonococci are highly susceptible to the germicidal action of soaps, Walker¹³ reporting *Neisseria intracellularis* killed in an exposure of two and a half minutes by 0.4 to 0.04 per cent solutions of soaps of the fatty acids ordinarily present in soap bases. *Neisseria gonorrhoeae* was killed under the same conditions by 0.04 to 0.006 per cent solutions of the same soaps. Phenol in 0.5 per cent solution was required under the same conditions. In 1931 Walker¹⁴ added influenza bacilli and *Treponema pallidum* to the list of micro-organisms susceptible to the bactericidal action of soaps and also reported that meningococci and gonococci were killed in an exposure of two and a half minutes at 20 C. by 1:640 dilutions of white floating soap, coconut oil soap, brown bar (laundry) soap, perfumed soap, Sapo Mollis (U. S. P.) and olive oil soap. The gonococcus was slightly more susceptible, being killed by dilutions of 1:1,280 of white floating soap and coconut oil soap. Colebrook and Maxted observed that refined toilet soaps and soft soap had much less bactericidal effect on *Streptococcus pyogenes* than yellow household soap.

Soaps prepared from pure fatty acids differed decidedly in their germicidal properties. There was no great difference in the actions of the sodium and potassium soaps of the same fatty acids.¹¹ Walker¹⁰ stated that the activity of coconut soap against the typhoid bacillus seems to be due to its high content of saturated fatty acids and to the very low proportion of unsaturated acids. In studying the germicidal action of the hydrogen ion and of the lower fatty acids, Cowles¹⁵ concluded that above p_H 2.6 the hydrogen ion concentration rapidly loses its germicidal power for *Staphylococcus aureus*. In the case of unbuffered lower fatty acids the germicidal action appears to be due to a summation of the effect of the hydrogen ion and of the undissociated molecule. In the case of the higher fatty acids the germicidal action against *Staphylococcus aureus*

5. Cornbleet, T., and Montgomery, B. E.: Self-Sterilization Powers of the Skin, *Arch. Dermat. & Syph.* **23**: 908-919 (May) 1931.
6. Karns, R., and Arnold, L.: Optimum Bacterial Suspension for Testing Skin Disinfection, *Proc. Soc. Exper. Biol. & Med.* **28**: 375-376, 1931.

7. Fisher, V.: Variations in Self-Disinfecting Power of the Skin During the Menstrual Cycle, *Proc. Soc. Exper. Biol. & Med.* **28**: 952-953 1931.

8. Arnold, L.: Relationship Between Certain Physicochemical Changes in the Cornified Layer and the Endogenous Bacterial Flora of the Skin, *J. Invest. Dermat.* **5**: 207-223, 1942.

9. Norton, J. F., and Novy, M. F.: Studies on the Self-Disinfecting Power of the Skin, *Am. J. Pub. Health* **21**: 1117-1125, 1931.

10. Walker, J. E.: The Germicidal Properties of Soap, *J. Infect. Dis.* **37**: 181-192, 1925.

11. Walker, J. E.: The Germicidal Properties of Chemically Pure Soaps, *J. Infect. Dis.* **35**: 557-566, 1924.

12. Colebrook, L., and Maxted, W. R.: Antisepsis in Midwifery, *J. Obst. & Gynaec. Brit. Emp.* **40**: 966-990, 1933.

13. Walker, J. E.: The Germicidal Properties of Soap, *J. Infect. Dis.* **38**: 127-130, 1926.

14. Walker, J. E.: The Germicidal and Therapeutic Applications of Soaps, *J. A. M. A.* **97**: 19-20 (July 4) 1931.

15. Cowles, P. B.: The Germicidal Action of the Hydrogen Ion and of the Lower Fatty Acids, *Yale J. Biol. & Med.* **13**: 571-578, 1941.

appears to be due mainly to the undissociated molecule. Valette and Liber¹⁶ reported that the germicidal action of the sodium salts of lauric, linoleic and ricinoleic acids on *Staphylococcus aureus* depended on the degree of hydrolysis. When tested in buffered solutions at p_H 5.8, 6.4, 7.2 and 8.0, sodium laurate and sodium linoleate were most effective at p_H 5.8. Sodium ricinoleate was most effective at p_H 6.4. Considering the p_H of the buffered solutions, it may be inferred that the germicidal action of these compounds is due to the undissociated fatty acid molecule. Colebrook and Maxted determined that it was not the alkalinity of the soap which was responsible for the bactericidal action on *Streptococcus pyogenes*.

Aside from the ordinary detergent action of soaps due to physical actions, certain micro-organisms appear to be killed by the chemical actions of the soaps. It is quite logical to expect that an attempt would be made to incorporate certain germicides in soaps in order to make the soaps germicidal to a wider range of micro-organisms and perhaps in higher dilutions of the soap. As was pointed out by Hamilton,¹⁷ the incorporating of a germicide in a soap is not without practical difficulties because of the physical properties of the resulting mixture or of chemical reactions impairing the quality of one or both of the two agents. The use of mercuric iodide as proposed by McClintock¹⁸ in 1897 has been used for the longest time and appears to be the most effective germicide after incorporating in soap (Symes,¹⁹ Norton,²⁰ Colebrook and Maxted¹²).

III. TESTING SOAPS FOR THEIR GERMICIDAL ACTION

As a starting point, the general directions for testing antiseptics and germicides as set forth in Circular No. 198²¹ of the United States Department of Agriculture can be followed for technic, but advantage should be taken of improvements in culture mediums which have been made in recent years. In the case of soaps, changes must also be made in the period of exposure of germicide and test organism. The majority of the germicidal soaps contain mercurials which are known for exerting a very high bacteriostatic, rather than a bactericidal, effect. Shippen²² recommended transferring four loopfuls from each subculture to a second tube of subculturing medium. This was for the purpose of diluting, to a point where it was no longer bacteriostatic, the germicide transferred to the first subculture tube along with the inoculum. However, this procedure probably does not remove any mercurial compound which may be bound, loosely or otherwise, to the micro-organisms and which may be continuing to exert a bacteriostatic effect. Another possible fallacy of this technic is that after the micro-organisms have been exposed to the germicide for as long as fifteen minutes the number of viable organisms contained in a loopful of material may be so small as not to allow any to be transferred with the four loop-

fuls of medium from the first subculture tube to the second subculture tube. Also the amount of germicide attached to the bacterial cells might be sufficient to prevent their growth or at least to prolong the lag period beyond the required incubation period of forty-eight hours. This assumption is verified by the results of tests reported in table 1.

The medium proposed by Brewer²³ in 1940 for the cultivation of anaerobic micro-organisms was found also to have the property of destroying the bacteriostatic effect of mercurial compounds which might be present in materials as preservatives, thus preventing the mercurials from continuing to exert a bacteriostatic effect in the subcultures. Sodium thioglycollate medium has been made the approved medium by the National Institute of Health for the testing of biologic products since July 1, 1942. It cannot, however, be considered a universal medium, as McClung²⁴ reported that it was unsatisfactory for certain members of the genus *Clostridium*.

The usual precautions that each lot of medium support adequate growth of the test organism should be observed, and in addition it must be demonstrated that each lot of thioglycollate medium is capable of destroying the bacteriostatic effects of mercurial compounds. An inoculum of 1 to 4 cells of *Staphylococcus aureus* has been found to initiate growth in either extract broth or sodium thioglycollate medium. However, the incubation period of forty-eight hours as prescribed in Circular No. 198²¹ when using extract broth for the subculturing medium is not sufficient when employing the sodium thioglycollate medium. This may not be due to the medium being poor in growth promoting qualities but rather to the fact that thioglycollate medium contains 0.05 per cent agar to make the medium less fluid and reduce convection currents. When only a few viable organisms are present in the inoculum, growth takes place as small discrete colonies, in contrast to the diffuse turbidity which takes place in a tube of extract broth or other fluid medium. Tubes of sodium thioglycollate medium often do not show visible signs of growth until between forty-eight and seventy-two hours, and occasionally between seventy-two and ninety-six hours. Seldom have changes been observed after ninety-six hours of incubation, but they do take place, so it is desirable to incubate subcultures in sodium thioglycollate medium for one week.

Technic.—1. Sterile distilled water was employed in making all dilutions.

2. In the case of liquid soaps, a 5 cc. portion was transferred to the first medication tube and another portion was employed for preparing serial dilutions in the medication tubes. The total volume of soap or soap solution in each medication tube was 5 cc.

3. In the case of bar soap, thin shavings were made from the edge of the bar, weighed on an analytic balance and transferred to a sterile graduated cylinder with a ground glass stopper. Usually the soap shavings were dissolved and diluted to 25 or 50 cc. in a cylinder of 50 cc. capacity. To hasten solution the cylinders of soap solution were frequently placed in a 37 C. water bath for a short time before the serial dilutions were made up.

4. The tests were carried out at room temperature.

16. Valette, G., and Liber, A.: Influence du pH sur le pouvoir antiseptique des savons et des sels biliaires, *Compt. rend. Soc. de biol.* **135**: 851-852, 1941.

17. Hamilton, H. C.: Facts and Fallacies in Disinfection, *Am. J. Pub. Health* **7**: 282-295, 1917.

18. McClintock, C. T.: A New, Practical Disinfectant Material, *M. News*, New York **70**: 485-487, 1897.

19. Symes, J. O.: The Antiseptic and Disinfectant Properties of Soap, *Bristol M.-Chir. J.* **17**: 193-197, 1899.

20. Norton, J. F.: Soaps in Relation to Their Use for Hand Washing, *J. A. M. A.* **75**: 302-305 (July 31) 1920.

21. Ruehle, G. L. A., and Brewer, C. M.: United States Food and Drug Administration Methods of Testing Antiseptics and Disinfectants, Circular 198, United States Department of Agriculture, December 1931.

22. Shippen, L. P.: A Fallacy in the Standard Methods of Examining Disinfectants, *Am. J. Pub. Health* **18**: 1231-1234, 1928.

23. Brewer, J. H.: Clear Liquid Mediums for the "Aerobic" Cultivation of Anaerobes, *J. A. M. A.* **115**: 598-600 (Aug. 24) 1940.

24. McClung, L. S.: Thioglycollate Media for the Cultivation of Pathogenic Clostridia, *J. Bact.* **45**: 58, 1943.

5. A twenty-four hour old culture of *Staphylococcus aureus* in extract broth p_H 6.8 was employed. It was maintained under conditions described in Circular No. 198. Five-tenths cc. was added to each medication tube.
6. Subcultures were made at intervals of five, ten and fifteen minutes with a 4 mm. platinum loop bent at an angle so that the flat surface of the loop was parallel to the surface of the fluid in the medication tubes when withdrawn. If a soap showed killing action in an exposure of five or ten minutes, it was retested at intervals of one-half, one, two, three and four minutes.
7. The temperature of incubation of subcultures was 37 C.
8. The duration of incubation of subcultures was one week.
9. The growth in critical tubes was checked microscopically and often by streaking onto appropriate medium.

- more advisable if only a few viable organisms are present.
- Interpretation of the Results in Table 1.*—1. Extract broth is not a satisfactory subculturing medium when testing soaps which contain a mercury compound.
2. The procedure of subculturing the material in the primary subculture tubes to a second tube of extract broth, as recommended by Shippen,²² is not satisfactory in destroying the bacteriostatic action of mercurial compounds.
3. Subculturing from the medication tubes directly into sodium thioglycollate medium is satisfactory, without making additional subcultures.
4. An exposure of the inoculum-germicide mixture to the action of sodium thioglycollate medium for fifteen minutes appears to be sufficient in the majority of cases to destroy the bacteriostatic action of the mercurial compound.

TABLE 1.—Comparison of Extract Broth and Sodium Thioglycollate Medium as Subculturing Mediums in Testing Soaps Which Contain Mercurial Compounds

	Extract Broth for Primary Subcultures									Sodium Thioglycollate Medium for Primary Subcultures								
	5 Min.	A	B	10 Min.	O	D	15 Min.	E	F	5 Min.	A	B	10 Min.	C	D	15 Min.	E	F
Phenol																		
1:80.....	—	—	—	—	—	—	—	—	—	+	+	+	—	—	—	—	—	—
1:90.....	+	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+
1:100.....	+	+	+	+	—	—	+	—	+	+	+	+	—	—	—	—	—	—
Neko soap, liquid *	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—
1:5.....	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	—
1:10.....	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+
1:50.....	—	+	+	—	—	+	—	—	+	+	+	+	+	+	+	+	+	+
1:100.....	+	+	+	—	—	+	—	—	+	+	+	+	+	+	+	+	+	+
1:250.....	+	+	+	—	—	+	—	—	+	+	+	+	+	+	+	+	+	+
1:500.....	+	+	—	+	+	+	—	—	+	+	+	+	+	+	+	+	+	+
Neko soap, bar †																		
1:50.....	—	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	+	—
1:100.....	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+
1:200.....	+	+	—	—	—	—	+	—	+	+	+	+	+	+	+	+	+	+
1:400.....	+	—	+	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+
Neko soap, bar ‡																		
1:50.....	—	—	—	—	—	+	—	—	—	+	+	+	+	+	+	+	+	+
1:100.....	—	—	—	—	—	+	—	—	—	+	+	+	+	+	+	+	+	+
1:200.....	—	+	+	—	—	+	—	—	—	+	+	+	+	+	+	+	+	+
1:400.....	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+
1:600.....	+	—	—	—	—	—	—	—	+	+	+	+	+	+	+	+	+	+
1:800.....	+	—	—	—	—	—	—	—	+	+	+	+	+	+	+	—	—	—
Septicide soap, liquid §.....	—	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	—	—
1:5.....	+	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	—	—
1:10.....	+	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	—	—
Metaphen soap, bar ¶																		
1:20.....	+	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	—	—
1:25.....	+	—	—	—	—	—	—	—	—	+	+	+	+	+	—	+	—	—

— = no growth; + = growth of the test organism, *Staphylococcus aureus*.
* Contains 0.25 per cent mercuric iodide.
† Contains 1 per cent mercuric iodide.
‡ Contains 2 per cent mercuric iodide.
§ Contains other germicides in addition to an equivalent of 1:7,000 mercury bichloride.
¶ Contains metaphen 1:500.

Tubes in columns A, C and E were extract broth and tubes in columns B, D and F were sodium thioglycollate medium used for subculturing the primary subcultures. These tubes were inoculated as follows: As soon as the standard phenol coefficient test was completed, 1 cc. from a primary subculture tube, after thorough mixing, was removed with a sterile 1 cc. pipet, 0.5 cc. transferred to a tube of extract broth, labeled either A, C or E, and the remaining 0.5 cc. transferred to a tube of sodium thioglycollate medium, labeled either B, D or F. After the contents of the tubes were thoroughly mixed, the tubes were incubated with the other tubes from the test. By employing the same time schedule as used for the phenol coefficient test and beginning immediately after completion of the test proper, the inoculum in each primary subculture tube was in contact with the subculturing medium for fifteen minutes. Sterile 1 cc. pipets were employed for making the subcultures from the primary subculture tubes instead of transferring 4 loopfuls, because it is more practical, being quicker and the larger inoculum

5. On the basis of the results with phenol, sodium thioglycollate medium is as satisfactory as standard extract broth for a subculturing medium even in the absence of a mercurial compound. (A word of caution is in order, however, as some lots of sodium thioglycollate medium required inoculums of about ten times the number of organisms necessary to initiate growth in standard extract broth.)

As far as could be learned, the following soaps are on the market which are claimed by the manufacturers to be germicidal:

Liquid Neko (Liquid Germicidal Soap), manufactured by Parke, Davis & Co., Detroit. Contains 0.25 per cent mercuric iodide.

Neko (Germicidal Soap, 1 per cent), manufactured by Parke, Davis & Co., Detroit. Contains 1 per cent mercuric iodide.

Neko (Germicidal Soap, 2 per cent), manufactured by Parke, Davis & Co., Detroit. Contains 2 per cent mercuric iodide.

Septicide Soap (Liquid), manufactured by National Drug Company, Philadelphia. Contains isopropyl alcohol 10 per cent, ether 10 per cent and equivalent of mercury bichloride 1:7,000.

Metaphen Soap, manufactured by Abbott Laboratories, Chicago. Contains metaphen 1:500.

Fawn Soap, manufactured by Fawn Soap Laboratory, Philadelphia. Contains chloramine-T 7 per cent.

The following toilet or household soaps were included in the tests for the purpose of determining the effect on the test organism of an ordinary soap which contains no added germicidal agent:

Fels Naphtha Soap, manufactured by the Fels Soap Company, Philadelphia.

Ivory Soap, manufactured by Proctor & Gamble, Ivorydale, Ohio.

Lifebuoy Soap, manufactured by Lever Bros., Cambridge, Mass.

Cuticura Soap, mildly medicated for toilet, manufactured by Potter Drug and Chemical Corporation, Malden, Mass.

Noxzema Brand Cream Soap, distributed by Noxzema Chemical Company, Baltimore.

Green Soap, obtained from a department of surgery.

Synol, a liquid soap manufactured by Johnson and Johnson, New Brunswick, N. J.

In table 1 are listed the results of the germicidal tests with those soaps containing mercurial compounds which require a special subculturing medium, such as sodium thioglycollate medium, for the purpose of destroying the bacteriostatic action of the mercurial compound. For the other soaps tested, standard extract broth is satisfactory. Results of the tests with soaps other than those listed in table 1 are listed in table 2.

Interpretation of Results in Table 2.—No evidence was observed of killing action against *Staphylococcus aureus* by the two brands of household soap, by four brands of toilet soap, by Green Soap or by Fawn germicidal soap in the dilutions employed. The dilutions employed in the test are comparable to the concentration of soap in lather.

In addition to taking advantage of the newer knowledge in testing mercurial disinfectants, the conditions under which the compound will have to exert its killing action in actual usage, i. e. time of exposure and concentration of the soap, should be considered. In the standard phenol coefficient test the end point is that dilution of the compound which will kill the test organism in ten minutes' exposure but not in five minutes. During the washing of hands in actual practice, the soap would not be in contact with the skin for a period of time as long as ten minutes. A minute is probably a fair estimate of the length of time a person uses soap in the careful washing of the hands (excluding surgeons). From the results listed in tables 1 and 2, only a few soaps showed killing action in the standard phenol coefficient test. These soaps were retested in shorter intervals of exposure. The results are given in table 3. In testing the germicidal action of soaps, workers have usually employed 1 or 2 per cent solutions of the soaps. A 1:50 or 1:100 dilution of soap will not lather when washing the hands. In actual washing of the hands, if a lather is produced it is a good indication that the concentration of the soap is greater than a 2 per cent solution. Walker¹⁰ stated that the concentration of soap in a good lather is about 8 per cent. In hurried washing it may be as little as 0.3 per cent, and in prolonged washing it may be as high as 20 per cent. Norton²⁰ estimated the amount of soap used in washing and found that it averaged about 0.5 per cent. The subjects washed their hands in 500 cc. of water, and Norton's figures represent the concentration of soap in the wash water and not in the lather in contact with the hands.

For the most part these findings substantiate those of Walker. The hands were washed with ordinary soap and water and dried. The clean hands were then washed with distilled water and a bar soap until a lather was produced. Sometimes the hands were washed hurriedly and only a light lather was produced. Other times the hands were washed more carefully and a heavy lather was produced. After about a half minute or a minute samples of the lather were collected in tared weighing bottles and dried over phosphorus pentoxide until constant weight. Thin shavings from the bar of soap were collected before the washing process, placed in a tared weighing bottle and subjected to drying in the desiccator along with the samples of lather to determine if there was an appreciable loss of moisture by the soap. The loss in weight was insignificant. The amount of dry residue from the lather indicated that the concentration of soap in sam-

TABLE 2.—Germicidal Tests with Soaps Not Containing a Mercurial Compound

	Extract Broth for Subculturing			Sodium Thioglycollate Medium for Subculturing		
	5 Min.	10 Min.	15 Min.	5 Min.	10 Min.	15 Min.
Phenol						
1:50.....	—	—	—			
1:100.....	+	+	+			
1:1000.....	+	+	+			
Synol.....	+	+	+	+	+	+
1:2.....	+	+	+	+	+	+
Green soap						
1:10.....	+	+	+	+	+	+
1:20.....	+	+	+	+	+	+
Fawn soap						
1:20.....	+	+	+
1:25.....	+	+	+	+	+	+
1:30.....	+	+	+
Lifebuoy soap						
1:15.....	+	+	+
1:25.....	+	+	+
Fels naphtha soap						
1:10.....	+	+	+	+	+	+
1:20.....	+	+	+	+	+	+
Ivory soap						
1:10.....	+	+	+
1:20.....	+	+	+
Cuticura soap						
1:15.....	+	+	+
1:25.....	+	+	+
Noxzema soap						
1:20.....	+	+	+
1:40.....	+	+	+

— = no growth; + = growth of the test organism, *Staphylococcus aureus*; .. = test not done. Conditions of the test were the same as described under the heading of Technique.

ples of lather varied from 10 per cent weight in a light lather to 20 per cent weight in a heavy lather. In testing soaps for their germicidal action they should be tested in concentrations corresponding to that found in lather, i. e. in about 1:5 or 1:10 dilution. The results of the tests with soaps in this range of concentration are listed in table 3.

Interpretation of the Results Listed in Table 3.—Of the soaps tested, only those containing 1 or 2 per cent mercuric iodide killed *Staphylococcus aureus* in an exposure of one minute, which more nearly represents the time of exposure in ordinary washing of the hands.

Since the bacteriostatic action of mercurial compounds may be neutralized by such substances as sodium thioglycollate, the following experiment was carried out to determine if perspiration is able to neutralize the bacteriostatic action of a mercurial: Perspiration was collected, sterilized by filtering through a sintered Pyrex glass filter and dispensed into test tubes in 1.5 cc. amounts. Various dilutions of Neko bar soap containing 2 per cent mercuric iodide were prepared. The test organism, *Staphylococcus aureus*, was added in 0.5 cc. amounts to 5 cc. amounts of the

germicide. At five, ten and fifteen minute intervals a loopful of the culture-germicide mixture was transferred to a tube of perspiration, a tube of extract broth, pH 6.8, and a tube of sodium thioglycollate medium. After the culture-germicide mixture had been in contact with the perspiration for fifteen minutes, 0.5 cc. was subcultured into a tube of extract broth and 0.5 cc.

TABLE 3.—Germicidal Tests with Soaps in Short Intervals of Exposure and in Concentrations Comparable to Those Found in a Good Lather

	1/2 Min.	1 Min.	2 Min.	3 Min.	4 Min.	5 Min.	10 Min.	15 Min.
Neko soap, liquid (0.25% mercuric iodide).....	—	—	—	—	—	0	0	0
1:2 dilution.....	+	+	—	—	—	—	—	0
1:5 dilution.....	+	+	+	+	+	+	+	—
1:10 dilution.....	+	+	+	+	+	+	+	+
Neko soap, bar (1% mercuric iodide) 1:5.....	—	—	—	—	—	—	—	—
1:10.....	+	—	—	—	—	—	—	—
1:20.....	+	+	+	+	—	—	—	—
Neko soap, bar (2% mercuric iodide) 1:5.....	—	—	—	—	—	—	—	—
1:10.....	0	—	—	—	—	—	—	—
1:20.....	+	+	—	—	—	—	—	—
Metaphen soap, bar (1:500 metaphen) 1:20.....	+	+	+	+	+	+	+	+
Septicide soap, liquid.....	+	+	—	—	—	—	—	—
1:2 dilution.....	+	+	+	+	+	+	+	+
1:5 dilution.....	+	+	+	0	0	+	+	+

— = no growth; + = growth of the test organism, *Staphylococcus aureus*; 0 = not tested. Sodium thioglycollate medium used as the subculturing medium. Conditions of the test as described under the heading Technique.

* Very difficult to work with soap in this concentration. The 1:5 dilution was prepared by heating the material in a water bath at 56 C. until solution was attained. After the dilutions were made the tubes were placed in a water bath at room temperature for a few minutes, then inoculated with the culture. The material formed a stiff gel, which made subculturing difficult.

into a tube of sodium thioglycollate medium. The results of the tests are given in table 4.

Interpretation of the Results Listed in Table 4.—Perspiration does not destroy the bacteriostatic action of mercuric iodide contained in soap.

COMMENT

In testing germicidal soaps, as with other germicides, it is necessary to employ a subculturing medium which will destroy the bacteriostatic action of the germicide which, of necessity, is transferred to the medium in the inoculum. In the case of mercurial compounds, sodium thioglycollate medium is satisfactory for this purpose. McClintock¹⁸ realized the importance of neutralizing the mercurial transferred with the inoculum, because in his publication in 1897 he stated that he subcultured from the medication tube to a tube containing ammonium sulfide to precipitate any mercury carried over in the loopful of material and then subcultured to a tube of appropriate medium, a method introduced by Geppert. It appears that this method and that described by Shippen²² are not as satisfactory as sodium thioglycollate in destroying the bacteriostatic action of mercurial compounds.

It is well to recall the meanings of the terms "disinfection" and "sterilization." The former means the act or process of destroying pathogenic germs or agents and the latter means the act or process of destroying all bacterial life. In either case the destruction is, or should be, an irreversible action. If it is possible to demonstrate that bacteria are viable after the bacteriostatic action of a compound has been neutralized, the bacteria have not been destroyed and the compound cannot be called truthfully a germicide or disinfectant. For scientific reasons the differentiation must be made between bacteriostatic and bactericidal actions.

Whether or not pathogenic bacteria, while under the influence of the bacteriostatic action of a compound such as a mercurial, are capable of producing an infection is a point which was not investigated.

By the heretofore accepted methods of testing germicides some of the germicidal soaps, especially the brands of soaps containing mercuric iodide, appeared to possess high germicidal powers. It has been observed repeatedly that the test organism *Staphylococcus aureus* appears to be killed by a 1:800 dilution of Neko soap containing 2 per cent mercuric iodide in an exposure of ten minutes. When sodium thioglycollate medium is employed as the subculturing medium the same soap in a 1:50 dilution fails to kill in an exposure of fifteen minutes. The liquid Neko soap, containing 0.25 per cent mercuric iodide, kills *Staphylococcus aureus* in an exposure of five minutes when diluted 1:5 and in a ten minute exposure when diluted 1:10 when subculturing into sodium thioglycollate medium. When subculturing into extract broth it appears that the organisms are killed in an exposure of five minutes in a dilution of 1:50 and in ten minutes by a 1:250 dilution of the soap.

Symes¹⁹ recommended McClintock's soap, containing 2 per cent mercuric iodide (Neko) as a useful means of disinfecting hands, instruments and surfaces, but after examining the results in table 1 one can see that Symes was basing his recommendations on the bacteriostatic rather than on the bactericidal action of mercuric iodide. He failed to distinguish between these two modes of action of mercurials.

Septicide liquid soap, when undiluted, killed the test organism in an exposure of five minutes, but an exposure of fifteen minutes was required to kill the test organism when the soap was diluted 1:5. The same killing power was obtained whether the subcultures were made in extract broth or in sodium thioglycollate medium, indicating that it was not the mercurial in the soap which was responsible for the killing action. Birkhaug²⁵ observed that a 1:14,000 dilution of mercury bichloride was needed to kill *Staphylococcus aureus* in ten minutes' exposure but not in five minutes when subcultures were made in extract broth. Nye²⁶ obtained

TABLE 4.—The Effect of Perspiration on the Bacteriostatic Action of Mercuric Iodide

(Neko bar soap, containing 2 per cent mercuric iodide)												
Dilution of Neko Soap	5 Minutes' Exposure Perspiration				10 Minutes' Exposure Perspiration				15 Minutes' Exposure Perspiration			
	B'	T'	B	T	B'	T'	B	T	B'	T'	B	T
1:50	—	—	—	+	—	—	—	+	—	—	—	+
1:100	—	—	—	+	—	—	—	+	—	—	—	+
1:200	—	+	—	+	—	+	—	+	—	—	—	+
1:400	—	+	—	+	—	+	—	+	—	+	—	+
1:800	—	+	—	+	—	+	—	+	—	—	—	+

— = no growth, + = growth of test organism, *Staphylococcus aureus*. B = subculturing medium, extract broth pH 6.8. T = subculturing medium, sodium thioglycollate medium. B' = culture soap mixture in contact with perspiration for fifteen minutes before subculturing into extract broth pH 6.8. T' = culture-soap mixture in contact with perspiration for fifteen minutes before subculturing into sodium thioglycollate medium.

values between 1:8,000 and 1:16,000, and Ecker and Smith²⁷ reported that a 1:5,000 dilution was needed for killing in the same time interval. When subculturing

25. Birkhaug, K. E.: Metaphen (4-Nitro-3, 5 Bisacetoxymercuro-Cresol): I. A Comparative Study of Commonly Used Disinfectants and Antiseptics; II. Histologic Changes Produced by the Intravenous Administration of Metaphen in Rabbits, J. A. M. A. 95:917-923 (Sept. 27) 1930.

26. Nye, R. N.: The Relative In Vitro Activity of Certain Antiseptics in Aqueous Solution, J. A. M. A. 108:280-287 (Jan. 23) 1937.

27. Ecker, E. E., and Smith, R.: Time-Killing Concentrations of Various Mercurials, Mod. Hosp. 48:90-94, 1937.

ing into sodium thioglycollate medium it was found that mercury bichloride cannot be diluted beyond 1:1,000 and still kill all *Staphylococcus aureus* organisms in ten minutes. Hoyt, Fisk and Burde²⁸ reported that less than a 1:1,000 dilution was required to kill in the same interval of time.

It is rather easy to test the germicidal action of liquid soaps in vitro. The testing of solid soaps is more difficult, because usually a dilution of the soap much more concentrated than a 1:50 dilution forms a gel too stiff for practical purposes of testing by the accepted technics. The dilution of a soap which lends itself well to manipulation with the platinum loop may not correspond to the concentration of the soap in contact with the skin during washing. The use of the agar cup method (Ruehle and Brewer²¹) as described for materials for which it is not practical to obtain aqueous solutions is not to be recommended for use with soaps, because it represents constant exposure of the test organisms to the germicide and because it does not differentiate between the bacteriostatic and bactericidal actions of the germicide. The filter paper technic, also described by the same authors,²¹ likewise does not appear to be applicable to the testing of soaps, because if a soap forms a solution sufficiently fluid to wet a piece of filter paper it is fluid enough to transfer with the standard loop.

The usual controls should not be neglected: 1. A knowledge of the resistance of the test organism to phenol is necessary. 2. It should be known that the culture medium supports growth of the test organisms when inoculated with very few of the test organisms. 3. In addition to the culture medium adequately supporting growth of the test organism, the medium should be efficient in destroying the bacteriostatic action of the germicide. 4. It is desirable to inoculate a loopful of diluted culture into tubes of the subculturing medium containing a loopful of the soaps in the highest concentration tested. The diluted culture should be prepared by adding 0.5 cc. of the test culture to 5 cc. of sterile distilled water (the same as used for preparing the dilutions of the soap) and allowing it to remain in contact for fifteen minutes or the longest time interval employed in the test. 5. It is often desirable to inoculate with a standard loopful of the diluted culture described in 4 the subculture tubes which do not show growth at the end of the incubation period. This is especially true of those tubes inoculated from the most concentrated solution of the soap. 6. When employing culture mediums containing small amounts of agar to reduce the fluidity of the medium, it is necessary to lengthen the incubation period. An incubation period of one week has been found to be adequate.

It has been recognized by many investigators that *Staphylococcus aureus* is very resistant to the action of soaps (Walker¹¹ and Colebrook and Maxted¹²). *Staphylococcus aureus* is the most important pyogenic micro-organism, so for all practical purposes it is the best test organism for testing the germicidal action of soaps.

In addition to determining the germicidal action of a soap against certain test organisms in vitro, the direct action in disinfecting the skin can be determined in a manner proposed for the evaluation of skin disinfectants, which have been summarized briefly in THE JOURNAL, Feb. 20, 1943, page 593. An in vivo method for evaluating skin disinfectants was described by

Kempf and Nungester,²⁹ in which the tail of a living animal is contaminated with living micro-organisms virulent for the animal, treating with the disinfectant, snipping off the end of the tail, inserting it into the peritoneal cavity of the animal and observing whether or not infection takes place. Another in vivo method was described by Sarber.³⁰ It differs from the foregoing method mainly in that a piece of skin from an area on the abdominal wall after being contaminated with living virulent micro-organisms and treated with the germicide is inserted into the peritoneal cavity of the same animal. For determining the action of germicidal soaps on the resident or endogenous bacterial flora of the skin the quantitative method described by Price³¹ may be employed and mathematical analysis as suggested by Bernstein³² applied.

Not only should germicidal soaps be free from irritating and toxic action on skin, mucous membranes or denuded areas, but certain actions on the skin, as suggested by Cromwell and Leffler³³ and Arnold⁸ must be borne in mind.

COMMENT BY JOSEPH V. KLAUDER, M.D.

An important practical feature in relation to these studies of the germicidal action of soap is the concentration of soap used in washing the skin. A 1 to 2 per cent solution of soap when employed for hand washing does not lather, yet a detergent action is apparent. Soap is not very soluble—a concentration much above 2 per cent at normal temperature jells and is not usually employed in ordinary hand washing. A higher concentration of soap used in hand washing is attained in the form of lather. To obtain a good lather, the act of washing with soap compound must be prolonged. The concentration of soap solution, the degree of lather and the time of exposure were pertinent factors in germicidal action of those soaps observed to exert such action.

Since soaps containing mercuric iodide exerted germicidal action, discussion of the effect of mercuric iodide on the skin is pertinent. Mercury and nickel are the two notable metals that have allergenic properties. Of the two, nickel has a higher allergenic index. The allergenic index of mercury is not high, certainly not sufficiently high to constitute an obstacle in the routine use of mercurial compounds on the skin. Ammoniated mercury ointment, for example, is frequently used. A person sensitized to mercury may be seen by the dermatologist perhaps once in a few years, among a large clientele, both clinic and practice.

To determine the primary irritant action of mercuric iodide on the skin, patch tests were performed with dilutions up to 2 per cent. Dilutions exceeding 2 per cent were not studied, since that was the maximum concentration of the chemical in the soaps studied in this report. Since mercuric iodide is not soluble in water, patch tests were performed with the chemical dissolved in 3 per cent solution of sodium thiosulfate. This percentage of sodium thiosulfate is not an irritant to the skin. It was observed that the skin of normal persons did not react to 2 per cent mercuric iodide in 3 per cent solution of sodium thiosulfate.

29. Kempf, A. H., and Nungester, W. J.: An In Vivo Test for the Evaluation of Skin Disinfectants, *J. Bact.* **43**: 49-50, 1942.

30. Sarber, R. W.: An In Vivo Method for the Evaluation of Germicidal Substances Used for Skin Disinfection, *J. Bact.* **43**: 50, 1942.

31. Price, P. B.: Ethyl Alcohol as a Germicide, *Arch. Surg.* **35**: 528-542 (March) 1939; The Bacteriology of Normal Skin.

32. Bernstein, L. H. T.: Standardization of Skin Disinfectants, *J. Bact.* **43**: 50-51, 1942.

33. Cromwell, H. W., and Leffler, R.: Evaluation of "Skin Degerming" Agents by a Modification of the Price Method, *J. Bact.* **43**: 51-52, 1942.

28. Hoyt, A.; Fisk, R. T., and Burde, G.: Antibacterial Action of Certain Disinfectants, *Surgery* **12**: 786-790, 1942.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 22, 1944

CRITERIA FOR RECOGNITION OF SHOCK

The common factor in the production of shock is a discrepancy between the effective circulating blood volume and the actual volume capacity of the vascular bed. The development of this fundamental change is primarily responsible for the impressive clinical symptomatology with low temperature, feeble and rapid pulse, cold skin, exhaustion and lowered arterial pressure. However, when this clinical syndrome appears, shock is often irreversible and therapy ineffective. Hence it becomes necessary to establish clinical criteria which will express the earliest, asymptomatic phase of the disparity between blood volume and vascular bed.

Many clinicians still believe that a low or falling arterial pressure constitutes an early and obligatory feature of shock. Blalock,¹ Moon,² Harkins³ and others have repeatedly pointed out that arterial pressure is a completely inadequate guide to the state of circulatory deficiency in incipient shock. Frequently the reactive vasoconstriction leads to an elevation of arterial pressure in the early stages of shock. A low blood pressure would follow later as a sign of advanced decompensation. This may account for the rare incidence of shock found by some investigators⁴ in head injuries and some other conditions when blood pressure is used as the only criterion of shock. Moreover, lowering of the arterial pressure may be maintained for several hours, without serious impairment to the circulation, as recently shown by Phemister and his co-workers.⁵ An opposite point of view regarding the value of blood pressure readings in shock has recently

been expressed by Evans and his associates,⁶ who concluded that, as compared with hemoconcentration and blood volume, the blood pressure level was the most valuable sign for early diagnosis of clinical traumatic shock in which hemoconcentration does not occur.

Hemoconcentration is probably the most frequently used single factor for recognition of shock. According to Moon it constitutes the earliest detectable manifestation of shock as well as the most accurate index of its severity. Mainly on the basis that absence of hemoconcentration expresses normal capillary permeability, this worker contends that hemorrhage should be differentiated from shock, as hemorrhage is accompanied by hemodilution and only terminally may be associated with hemoconcentration. In contrast to this concept, Blalock⁷ has shown that an irreversible typical syndrome of shock with pathologic signs of increased capillary permeability, which is as a rule associated with hemoconcentration, may be elicited by simple and slow removal of blood. Davis⁸ also observed identical pathologic features in protracted hemorrhage and in traumatic shock. Much of the experimental work being done on shock employs the withdrawal of blood as the initiating factor thus implying that the differentiation between shock and hemorrhage has not been generally accepted. Harkins summarizes this point of view, stating that a differentiation between hemorrhage and other types of shock would not have any diagnostic, prognostic or therapeutic value. In clinical cases, often both whole blood and plasma are lost. Hence hemoconcentration is not a regular feature and, except in cases of burns, cannot be relied on as an accurate sign for recognition of early clinical shock.

As the basic disturbance in all types of shock is a reduced blood volume, this estimation could be regarded as the most logical index of impending shock. The determination of blood volume was made feasible in practice by the use of Evans' blue dye. However, the reports on the use of this method in shock provide conflicting results. Although recognizing the significance of reduced blood volume, Freeman⁹ has objected to this method because the increase in capillary permeability in shock permits a considerable amount of dye to escape from the circulation. Evans and his associates found, however, that the rate of dye disappearance was the same in normal and in shocked animals. Even if this conclusion is correct, determination of blood volume would not be adequate for following the progress of

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2. Moon, V. H.: Shock and Related Capillary Phenomena, New York, Oxford University Press, 1938.

3. Harkins, Henry N.: Recent Advances in the Study and Management of Traumatic Shock, Surgery 9: 231 (Feb.) 1941.

4. McGregor, Lee: Head Injuries: A Critical Analysis of 500 Cases, Internat. Abstr. Surg. 75: 1, in Surg., Gynec. & Obst., July 1942.

5. Phemister, Dallas, B., and others: Afferent Vasodepressor Nerve Impulses as a Cause of Shock, Tested Experimentally by Aortic Depressor Nerve Stimulation, Ann. Surg. 119: 26 (Jan.) 1944.

6. Evans, Everett I., and others: Studies on Traumatic Shock: I. Blood Volume Changes in Traumatic Shock, Ann. Surg. 119: 64 (Jan.) 1944.

7. Blalock, Alfred: Shock: Further Studies, with Particular Reference to the Effects of Hemorrhage, Arch. Surg. 29: 837 (Nov.) 1934.

8. Davis, Harry A.: Factors in the Production and Treatment of Shock: An Experimental Study, M. Ann. District of Columbia 6: 344 (Dec.) 1937.

9. Freeman, N. E.; Freedman, H., and Miller, C. C.: The Production of Shock by the Prolonged Continuous Injection of Adrenalin in Unanesthetized Dogs, Am. J. Physiology 131: 545 (Jan.) 1941.

shock since this estimation could not be repeated at frequent intervals.

All other criteria, such as low venous pressure, acapnia, increased cardiac output and rise in blood potassium, are equally unreliable, inconsistent or unpractical for the early characterization of shock. A combination of the commonest manifestations and features, particularly those most suitable for practical use, constitutes a more adequate procedure in the detection and follow-up of different stages of shock. In a certain proportion of cases, peripheral collapse will progress unrecognized until a stage of irreversible circulatory deficiency has developed. The paucity of our present knowledge on this important subject indicates urgent need for further work.

VARIATIONS IN PHAGOCYTTIC FUNCTIONS

Studies of vitamin deficiencies have shown that adequate amounts of most vitamins are essential for normal resistance to infectious diseases.¹ Attempts to determine the mechanism by which resistance is lowered in the presence of vitamin deficiency, however, have been unsuccessful. Data thus far reported indicate that antibody response is practically normal in vitamin deficient animals, suggesting the probability that the observed reduction in resistance is due to reduced phagocytic functions.

Careful quantitative studies of variations in phagocytic power under different nutritional conditions have been undertaken by Cottingham and Mills² of the Laboratories of Experimental Medicine, University of Cincinnati. In their tests a standard dose of *Micrococcus candidus* was injected intraperitoneally into mice that had been maintained for several weeks on various partially deficient diets. Four hours later, smears were made of the peritoneal exudates. In a typical test control, mice were maintained at 68 F. for three weeks on a diet containing 2 mg. per kilogram of thiamine, which is adequate for this species. The four hour peritoneal smears showed that 33 per cent of the mononuclear cells had ingested the micro-organisms. This degree of phagocytosis was reduced to 20 per cent in mice previously maintained on but 1 mg. per kilogram of thiamine. Phagocytosis was not demonstrable in mice maintained for the same period of time on a diet containing as little as 0.5 mg. per kilogram of thiamine. When the thiamine intake was increased above the growth optimum (2 mg. per kilogram) mononuclear phagocytosis increased to 37 per cent. In the same animals intraperitoneal polymorphonuclear phagocytosis was reduced one half by

thiamine deficiency and increased fourfold as a result of thiamine excess (8 mg. per kilogram).

Parallel studies of phagocytosis were made in vitro with the heparinized whole blood of rats which had been maintained for several weeks on deficiency diets. In these tests blood smears were made at the end of four minutes to determine the percentage of cells showing immediate phagocytosis, and at the end of one hour to show evidence of intracellular bacterial digestion (loss of staining power, fragmentation and so on). The investigators found that rats maintained for seven weeks on a diet containing 4 mg. per kilogram of pyridoxine yielded blood whose leukocytes took up an average of 13.56 micro-organisms per cell by the end of four minutes. By the end of one hour 82 per cent of these cells showed evidence of intracellular digestion. On a partial deficiency diet (0.5 mg. per kilogram of pyridoxine), phagocytosis was reduced to 4.95 micro-organisms per cell, and intracellular digestion was demonstrable in but 15 per cent of the phagocytes. Similar or even larger reductions in phagocytic functions were noted in rats fed a diet partially deficient in thiamine, riboflavin, pantothenic acid, choline or combined vitamins A and D. Deficiencies in inositol and p-aminobenzoic acid were without deleterious effects.

Since rats and mice synthesize ascorbic acid, tests of vitamin C deficiency were made on guinea pigs. Leukocytes of adequately fed guinea pigs would take up an average of 18.3 micro-organisms per cell in vitro, and 99 per cent of these cells showed evidence of bacterial destruction by the end of one hour. On a vitamin C deficient diet, phagocytosis was reduced to 7.3 bacteria per cell, with intracellular digestion reduced to 74 per cent.

The Cincinnati investigators supplemented this study by testing the deleterious effects of quantitative variations in protein intake.³ They found that after five and one-half weeks maintenance at 68 F. rats showed a maximum phagocytic activity on diets containing 18 per cent of protein. There was a definite decrease in phagocytic activity with an increase or decrease from this level. In rats maintained at 90 + F. the phagocytic optimum diet was 36 per cent of protein. Thus adequate protein intake would seem to be fully as important as adequate vitamin intake to maintain optimal phagocytic activity (resistance to microbic infections). The immunologic optimum protein intake is higher in the tropics than in temperate climates.

This demonstration of important variations in phagocytic functions is a pioneer contribution to basic immunologic theory and may have wide clinical implications.

1. Robertson, E. C.: *Medicine* 13: 123 (May) 1934. Clausen, S. W.: *Physiol. Rev.* 14: 309 (July) 1934.

2. Cottingham, Esther, and Mills, C. A.: *J. Immunol.* 47: 493 (Dec.) 1943.

3. Mills, C. A., and Cottingham, Esther: *J. Immunol.* 47: 503 (Dec.) 1943.

Current Comment

CRITICAL SHORTAGE OF QUINIDINE

For some time an acute shortage of quinidine has existed in the United States. Consumption has been high and replacement of present supplies practically negligible. As a result of its critical status, the Committee on Drugs and Medical Supplies of the National Research Council and its Subcommittee on Cardiovascular Diseases recommended that quinidine be limited to prescription use for the treatment only of heart disease. The suggested criteria for use are:

1. Ventricular tachycardia diagnosed electrocardiographically.
2. Congestive heart failure that appears definitely to have been precipitated by the sudden onset of auricular fibrillation (if not adequately controlled by digitalis).
3. Persistent premature ventricular contractions in patients who have acute coronary artery occlusion.
4. Chronic disease of the heart associated with paroxysmal auricular fibrillation, paroxysmal auricular tachycardia or auricular flutter.
5. A history of systemic embolization in a case of paroxysmal or established auricular fibrillation.

Regardless of these proposals and the publicity given to them, consumption of quinidine has continued to be high. Ordinarily, about 80,000 ounces of the drug is used during a year; present stocks amount to between 29,000 and 30,000 ounces. It is the duty of every physician to prescribe quinidine only when no other drug will elicit a favorable response, and then only in quantities not exceeding fifty tablets for each prescription. Hospital administrators can provide much assistance by insisting that the members of the staff adhere rigidly to a program which provides for the restricted use of such critical drugs as quinidine. Pharmacists have a moral responsibility to release quinidine only on prescription. This is an emergency, and whole hearted cooperation is essential.

HEALTH TRANSCRIPTION BROADCASTING IN ARIZONA

The Arizona State Medical Association, using electrical transcriptions of the series *Before the Doctor Comes*, originated by the Bureau of Health Education of the American Medical Association, has developed an excellent continuity. The broadcast is called "The Medical Quarter Hour." The transcription itself occupies only ten minutes, so the program is opened with a familiar theme, for which a popular waltz record is used. Then follows an announcement to the effect that the stations of the Arizona network "present at this time a transcribed public service broadcast made available through the sponsorship of the Arizona Medical Association." Introductory remarks are made by the announcer, who describes the purpose of the broadcasts and gives forecasts of the programs to come. The transcription is then introduced and played. After the transcription, a message is read from the Arizona Medical Association which invites the listeners to send in comments and suggestions and offers to answer questions suggested by the broadcast. If time permits, a Health Hint appropriate to the program is added. For example, in connection with the transcription

dealing with "Sniffles" there are some suggestions pertinent to colds and other related conditions. This combination of music, local material and a transcribed message from the American Medical Association is the kind of use for which the transcriptions were originally prepared. This way of giving radio listeners health information from the American Medical Association through community and state societies automatically makes clear the relationship between the family doctor and the medical organization to which he delegates many of his important functions, including health education. The Arizona broadcasts are described here with the thought that this method may contain suggestions for similar use of the available transcriptions in other localities.

THE TRINIDAD OUTBREAK OF EQUINE ENCEPHALOMYELITIS

Equine encephalomyelitis in Venezuela and Colombia is a mosquito transmitted infection caused by a virus that is related to equine neurotropic viruses in this country but immunologically distinct. In October 1943 an explosive outbreak of encephalomyelitis attacked horses, mules and donkeys in the island of Trinidad, 6 miles off the Venezuelan coast at the nearest points. According to Gilyard,¹ who investigated the Trinidad outbreak, there is good reason to conclude that it was due to mosquitoes flying across from the mainland. The prime vector of the epizootic may have been the mosquito *Mansonia titillans*, but other species cannot be definitely excluded. The virus was obtained from *M. titillans* in the field on guinea pig inoculations, and Venezuelan vaccine gave complete protection. In addition to the account of the mosquito conveyance of the disease, Gilyard reports also a human case of Venezuelan encephalitis. About six weeks before the equine outbreak a seaman of the U. S. Navy died of encephalitis on the gulf coast of Trinidad about 20 miles north of the subsequent animal outbreak. Just how this seaman was infected is not known, but the diagnosis of equine encephalitis was confirmed by appropriate tests of the brain. This appears to be the first human case in which death has been traced to equine encephalitis of the Venezuelan type. It seems to be established that the three strains of equine encephalitis now known to exist in the Western Hemisphere can cause fatal infections in man.

THE DISTINGUISHED SERVICE MEDAL

The Distinguished Service Medal of the American Medical Association will be presented for the seventh time at the Opening General Meeting on Tuesday night, June 13, in the ballroom of the Palmer House, Chicago, during the annual session of the American Medical Association in Chicago, June 12-16, 1944. The medal was awarded, for the first time, in 1938 to Dr. Rudolph Matas of New Orleans, in 1939 to Dr. James B. Herrick of Chicago, in 1940 to Dr. Chevalier Jackson of Philadelphia, in 1941 to Dr. James Ewing of New

1. Gilyard, R. T.: Mosquito Transmission of Venezuelan Virus Equine Encephalomyelitis in Trinidad, Bull. U. S. Army Med. Depart. 75:96 (April) 1944.

York, in 1942 to Dr. Ludvig Hektoen of Chicago and last year to Dr. Elliott P. Joslin of Boston. This award is recognized as one of the most distinguished honors within the gift of the American Medical Association. Any Fellow of the Association may submit nominations, which should be sent, together with a record of the scientific services of the nominees, to the chairman of the Committee on Distinguished Service Award, Dr. A. A. Walker, 2250 Highland Avenue, Birmingham, Ala., or to the Secretary of the Association at 535 North Dearborn Street, Chicago. Of all nominations received by the committee, five are submitted to the Board of Trustees of the Association, from which the Board selects three to be submitted to the House of Delegates at its first meeting at the time of the annual session. Immediately on submission of the nominations by the Board of Trustees, the House of Delegates by official vote selects the recipient of the honor, to whom the Distinguished Service Medal is presented at the meeting at which the President-Elect is installed as President, which is usually on Tuesday evening of the week of an annual session. An extended list of distinguished physicians nominated for this award will enable the committee, the Board of Trustees and the House of Delegates, all of whom participate in the selection, to determine for 1944 a recipient of distinction, whose nomination will reflect favorably on himself and the Association.

TRANSPORTATION TO THE ANNUAL SESSION

According to current rules of the Office of Defense Transportation, reservations for pullman space of the railroads cannot be made more than thirty days in advance. The time of the annual session is June 12 to 16. Many physicians will be coming to Chicago for various smaller meetings that occur on June 10 and 11; others will be planning to return home at various times during the meeting. Therefore this comment is published to warn physicians well in advance of the necessity for making reservations for transportation at the earliest possible moment in relation to the trip. The entire trip should be planned so that reservations may be secured for coming to Chicago and returning home. This may require two trips to the reservations office—one for the trip going and the other for the trip returning. Transportation out of Chicago is under great pressure even in ordinary times. It will not be wise for a doctor to wait to purchase his return transportation until after his arrival in Chicago.

"THE STORY OF DR. WASSELL"

Next week the city of Little Rock, Ark., will be the site of a première of an unusual picture called "The Story of Dr. Wassell," directed by Cecil B. DeMille and produced by Paramount. The picture portrays the career of Dr. Corydon M. Wassell of Little Rock, somewhat romanticized, but follows nevertheless the high points of his life. Thus it includes his practice in Arkansas, his service as a medical missionary with a feeling for research, and his great accomplishment in

transporting a group of wounded sailors across Java while the Japs were invading the island. Probably the most dramatic single incident in the picture is the introduction of the voice of the President of the United States when in his fireside chat on April 28, 1942 he quoted the official Navy report regarding Dr. Wassell and described the accomplishment for which he received the Navy Cross and the Officer's Cross in the Order of Orange Nausau from Queen Wilhelmina of Holland. This picture should be an inspiration to every physician who, in the midst of his busy life these days, gets an opportunity to see it. It should, of course, do much to carry to the American people the great service that American physicians are rendering in the war.

BORIC ACID CAUSES MORE INFANT DEATHS

Boric acid accidentally administered in milk formulas given to infants has caused the deaths of 4 infants and affected 20 others, some of whom may also die, according to recent press reports. This occurred in a New London, Conn., hospital. Boric acid crystals, according to the reports, were incorporated in the milk formulas by mistake because of their similarity in physical appearance to dextrose crystals. Unfortunately this is not the first time that boric acid has been responsible for accidental infant deaths in a hospital. In 1927, through a confusion of technic, infants in the nursery of a Chicago hospital were given boric acid solution instead of drinking water, and 6 of them died. Although these accidents and a few others like them have occurred only rarely and have been widely separated geographically and by time, the need for more careful protective devices is apparent. Boric acid, although it has only minor toxic properties as compared with other substances, is extensively used in the care of the skin and eyes of infants, so that it must be strictly segregated from those substances which may be incorporated into infant foods.

AID TO DIAGNOSIS OF MENINGO- COCCIC INFECTIONS

The early accurate diagnosis of meningococcic infections has assumed more than ordinary importance in view of the congestion of populations in industrial and military areas. Recently, Bernhard and Jordan¹ found meningococci in smears from purpuric lesions in 27 of 40 cases of meningococcic infections with such lesions. On culture the organisms were isolated in 35 of these 40 cases. In 25 cases of meningitis which showed clear spinal fluid with normal chemical constituents, positive spinal fluid cultures were obtained. The authors conclude from this high proportion of positive results of smears and cultures from the purpuric lesions that this method is a highly satisfactory procedure for the rapid and early diagnosis of meningococcic infections. This may prove a particularly valuable aid to diagnosis in certain types of clinical cases, especially those without early manifest signs of meningeal involvement.

1. Bernhard, W. G., and Jordan, A. C.: Purpuric Lesions in Meningococcic Infections, *J. Lab. & Clin. Med.* 29: 273 (March) 1944.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

NUTRITIONAL ASPECTS OF CONVALESCENT CARE

It may be assumed that the soldier or sailor who has subsisted on normal service rations is in an excellent nutritional state up to the time he becomes disabled by illness or disease. Exceptions must be made of men who, because they were isolated when they incurred their disability, had not received full rations.

As soon as injury or disease occurs, malnutrition almost always begins. This is the result of two processes: first "toxic destruction of protein"—i. e., the direct effect of disease or injury in promoting destruction of tissues—and, second, diminished intake of food, because of inability or disinclination to eat. Both of these processes bear some relation to the severity of the injury or disease.

Although some wastage of tissue can be tolerated and has no easily demonstrable effect on strength and efficiency, the extent of such "harmless" deficiency is ill defined. There is ample evidence that any considerable nutritional deficiency is distinctly harmful: It first reduces tolerance for exceptional exertion; in its most severe form it is altogether incapacitating. Even a mild degree of malnutrition should, therefore, be prevented because, though its evil effect may be undetectable, it marks a step toward incapacity and each step makes physical efficiency more precarious.

The "toxic destruction of protein" can be alleviated only by effective treatment of the disease or injury from which it originates. Its evil effects are, however, exaggerated by inadequate dietary intake. Wasting from this cause can be prevented in a large proportion of patients, and even "toxic destruction of protein" may be reduced by the effective administration of fluid and food in proper quantities and proportions. In addition, by improving the general state of health these measures promote and shorten the processes of repair.

Attention is likely to be given to the dietary needs of persons who are suffering from serious diseases and injuries, although the regimen may not always be wisely directed. From a military standpoint more man-days could be gained by accelerating the recovery of those with less grave conditions who may be rapidly returned to active service. Every effort should be made, therefore, to prevent malnutrition and minimize wasting in acute or minor casualties as well as in men with more serious disabilities.

The average medical officer is so preoccupied with the specific treatment of the disease or injury which confronts him that he is prone to overlook details of dietary management, especially when there are no urgent indications. In

addition, even if he has the best will in the world, he may be insufficiently acquainted with fundamental principles of nutrition. For both these reasons it would be well in hospitals with a sufficiently large staff to place the responsibility for general supervision of dietary management and nutrition of patients on a particular member or members of the medical staff of the hospital. These nutritional medical officers should not order diets for all the patients in the hospitals, but they should rather act as instructors and consultants to the medical officers in charge of wards and should see that good dietary principles are observed throughout the hospital.

Outlined in succeeding paragraphs are the general principles underlying nutrition, knowledge of which may be expected to enable the medical officer to mitigate wasting and to accelerate recovery of patients.

Emphasis should be placed on the importance of prevention rather than correction of nutritional deficits. The proverb "An ounce of prevention is worth a pound of cure" is nowhere more applicable than in the field of nutrition. By focusing his attention on the diets at the very onset of illness, the medical officer can avoid the necessity of treating the serious effects of prolonged malnutrition.

GENERAL PRINCIPLES

Obvious but often overlooked is the fact that food offered to a patient is of no value unless it is eaten. The amount of food actually consumed should be ascertained. If food offered to the patient is not eaten, the reasons must be learned and, if possible, corrected. Anorexia must be regarded as a challenge, not as an inevitable and irremediable consequence of disability. Although patients should be encouraged to eat as varied a diet as possible, idiosyncrasies cannot be altogether neglected. Failure to eat may arise from physical weakness, exhaustion or the fact that the necessary motions are painful. It may be necessary to feed patients under these conditions. Fluid or semisolid diets may be essential for seriously ill patients. In the absence of gastrointestinal disturbances patients who will drink freely can usually be given adequate protein and calories in the form of fluids if advantage is taken of the sense of thirst. This sense should not be too much dulled by water and nonnutrient fluids; nutrient fluids should be made available to quench it. Thirst may be stimulated by the intelligent use of salt (see next section). But fluid or semisolid diets, because they are not conducive to appetite, should not be continued if the patient is able to take solid food. The chief reason for giving fluids, semisolids and soft foods to the sick is to relieve them of the work of cutting or masticating the foods. All foods become liquid in the gastrointestinal tract except milk, which first coagulates in the stomach. In some conditions frequent feedings are desirable; in this case the total diet is best divided equally into the required number of meals. Intermediate feedings (between meals of a regular dietary) may only spoil the appetite for the regular meals. Night feedings, shortly before sleep, are usually well tolerated; high calory feedings, instead of the usual light fluids, may be given to advantage at this time.

After a conference on Nov. 16, 1943, the Committee on Convalescence and Rehabilitation requested Dr. J. P. Peters, Yale University, and Dr. Robert Elman, Washington University, to draw up a report embodying methods of treatment which will maintain the best possible nutritional state in patients who are sick or injured. This request was made because of the belief that the use of well established principles of nutrition may diminish the catabolic effects of illness and therefore shorten the duration of convalescence. This report was presented at a meeting on Dec. 17, 1943 and was then modified by the authors and the committee to its present form. Acknowledgment is made of the contribution of the following men to the discussions which led to this report: Drs. Fuller Albright, R. C. Darling and Allan Butler, Harvard University; Co Tui, New York University; L. E. Holt Jr. and J. E. Howard, Johns Hopkins; Ancel Keys, Minnesota; R. F. Loeb, Columbia; S. C. Madden, Rochester; W. C. Stadie, Pennsylvania.

It is also obvious that whenever possible the patient should eat his necessary food in the normal way. It is not only unnatural but laborious for the doctor and distressing to the patient to meet all dietary requirements by means of other devices. Tube feedings or parenteral injections should not be employed merely as a means of evading the difficulties which arise from simple anorexia. On the other hand, these two methods are preferable to malnutrition and should be used when indicated. Their use, indeed, should make it possible to avoid malnutrition even if the patient is unable to take any food or fluid by mouth.

DIETARY ESSENTIALS

Water.—Enough water must be given to provide for insensible and sensible perspiration and for the production of sufficient urine to enable the patient to excrete the waste products that must be eliminated, without depleting the essential water stores of the body. Loss of water by the skin varies with the environmental temperature and the total caloric expenditure. The best criteria of an adequate water supply are:

(a) The volume of urine, which should not fall below 1,000 cc. in febrile patients; (b) the specific gravity of the twenty-four hour urine, which should not exceed 1.020, and (c) normal elasticity of the skin and subcutaneous tissues, the moist appearance of the tongue and the absence of uncomfortable subjective sensations of thirst.

Forcing fluids—i. e., inducing a patient to take uncomfortably large quantities of plain water—is seldom indicated. It is tiring and distressing to the patient and often impairs appetite. If a large intake is necessary, enough salt should be given to promote thirst.

Salt.—Animals derive their sodium salts almost entirely from sodium chloride added to their food. If the sodium salts of the body become depleted, water is not properly retained and dehydration results. In addition, sodium deficiency promotes circulatory failure. Patients with sodium depletion lose thirst, appetite and strength. If the sodium deficit becomes great, circulatory collapse may supervene.

Normal kidneys conserve sodium and chloride most efficiently. Chloride practically disappears from the urine as soon as its concentration in the serum falls appreciably below normal. If the urine contains little or no chloride (that is, yields little precipitate when treated with silver nitrate), it may be presumed that there is a salt deficiency. An exception must be made of patients with gross renal insufficiency, lobar pneumonia, advanced chronic tuberculosis and other destructive pulmonary diseases. In these conditions the kidneys do not retain their normal capacity to conserve salt. Consequently, urinary chloride excretion may continue after serum chloride has fallen below normal limits.

The insensible perspiration (fluid lost through the lungs and by the skin without sweating) amounts to 1,000 to 1,500 cc. and contains no salt. Sweat and exudates do contain salt that must be replaced. The stomach has no regard for the salt which does not cease even when serum sodium and chloride are depleted. Administration of water (ice in water) by mouth in the face of persistent vomiting only washes salt from the body and enhances dehydration, as does continuous gastric suction and lavage. For lavages of all kinds, isotonic solution of sodium chloride, not water, should be used.

All persons, unless they have congestive heart failure or nephritis with edema, should receive at least 5 Gm. of sodium chloride daily. The average normal diet contains more than this. If, however, patients do not eat enough of their diets or subsist chiefly or entirely on simple fluids, containing only carbohydrate, extra salt should be given. This may be introduced in broth or tomato juice or even in milk and fruit juices. Administration of adequate amounts of salt will often increase the intake of both food and fluid by creating appetite and thirst. Salt-depleted patients will not eat or drink well.

Protein.—Protein is indispensable; it cannot be replaced by any other food. A normal subject, starving, loses about 1 Gm. of tissue protein per kilogram of body weight per day. This deficit can be reduced to 0.3 to 0.5 Gm. by the administration of high calories in the form of carbohydrate and fat; it cannot be prevented entirely. Moderate amounts of carbohydrate alone will reduce protein loss considerably. In acute febrile diseases and after serious injuries protein wastage may rise to 3 or more grams per kilograms of body weight per day. This can be reduced only slightly by feeding carbohydrate. There is evidence that the lost tissue protein can be partly or wholly replaced and consequently that wasting can be mitigated or prevented by the administration of large amounts of protein and sufficient amounts of carbohydrate and fat to provide for the caloric requirements of the patient. This is a matter of great importance, since loss of tissue protein sacrifices the substance of liver and other important organs. It also results in depletion of serum proteins (hypoproteinemia), which ultimately leads to nutritional edema.

Every effort should be made to prevent this loss by administration of diets containing adequate amounts of protein of high biologic value containing all the essential amino acids in proper proportion. For this purpose, milk and eggs (the latter preferably cooked) may be used if patients are unable to take solids. Ground meats may, however, be given earlier and more freely than is generally believed.

Diets for sick or injured persons should contain 100 Gm. or more of protein daily. Nothing less than 1 Gm. of protein per kilogram of body weight per day can be regarded as a safe subsistence ration for a normal adult.

Carbohydrate.—A small amount of carbohydrate, perhaps 100 Gm. per day, is required to prevent ketosis in man. If this is not given, protein is broken down to provide carbohydrate. Granted sufficient protein and this minimum of carbohydrate, well nourished subjects can derive most of the additional calories needed from body fat, without serious injury.

Fat.—The least important element of the diet in acute disease is fat. Indeed, fat comprises the only large store of calories on which the body may draw without depleting essential tissues. In prolonged wasting conditions, however, fat deposits may become exhausted. It is, therefore, advisable if possible to prevent excessive loss of fat by giving high calories. For this purpose fat itself is peculiarly suited because it provides the greatest number of calories in the smallest bulk. The digestive system of most ill or injured persons tolerates, digests and absorbs fat well if it is given in palatable form with suitable carbohydrate vehicles. Nevertheless, if there is a limitation of the amount of food a patient can take, it is far better to give precedence to protein.

Vitamins.—Starving animals appear to acquire at first no vitamin deficiencies because for short periods they derive adequate vitamins in suitable proportions from their tissues. However, vitamin deficiencies develop after considerable periods on inadequate diets. The utilization or excretion of certain vitamins may be specifically increased by particular diseases, especially those which accelerate metabolism. Nothing is as effective in preventing vitamin deficiencies as a generous mixed diet. Complete oral mixtures of vitamins, especially brewers' yeast and other satisfactory preparations of vitamin B elements, when given in adequate quantities may destroy the appetite for food. They should therefore be used with caution as supplements to diets. Although complete vitamin mixtures for parenteral injection are not available, some important vitamins may be given readily.

Although a full well balanced diet best meets nutritional needs, it is frequently impossible for the injured or sick to take such a diet. It then becomes necessary to give priority to the food elements which are most urgently needed. The accompanying table lists in order of importance the various dietary constituents and the amounts of each which are required.

In patients previously well nourished, suffering from a disability or illness of short duration no serious harm develops from failure to maintain a high calory or fat intake, since the necessary calories will be derived from body fat if the minimum requirements for water, salt, protein and carbohydrate are met. When the patient is undernourished and the illness is long drawn out, fat stores may be depleted. The maintenance of adequate caloric intake then changes from a merely desirable part of therapy to a matter of more urgent importance.

If a patient had ample stores of vitamins before becoming sick, special efforts to supply these essential elements are not necessary during most acute illnesses. If the patient had been previously depleted of vitamins or is unable for a long period to take a balanced diet, vitamins should be administered.

TUBE FEEDING

Feeding by stomach tube is not a satisfactory procedure. Insertion of the tube is time consuming for the physician and often not pleasant for the patient. In unconscious patients the possibility of aspiration of injected material into the lungs introduces an element of danger.

In general, tube feeding should not be used until an honest effort has been made to have the patient eat. Such effort includes provision of palatable food of a type most appealing to the patient and some personal attention by the physician to overcoming the patient's distaste for food. When gavage is used, it should always be done as a temporary expedient with the patient's full knowledge that it will be discontinued as soon as he eats an adequate amount. However, there are

Dietary Constituents and Amounts Required

	Minimum Need	Average Requirements in Sick Patient
1. Water	2,000 cc.	3,000 cc.
2. Salt	5 Gm.	10 Gm.
3. Protein	75 Gm.	100-150 Gm.
4. Carbohydrate	100 Gm.	100-300 Gm.
5. Fat	(See discussion)	(See discussion)
6. Vitamins	(See discussion)	(See discussion)
7. Calories	(See discussion)	(See discussion)

clinical situations in which tube feeding is the only practicable means of preventing serious malnutrition of the patient. It may be necessary to resort to this procedure when the amount of nursing and other ward assistance is limited so that personnel is not available to spoon feed patients who are unable to feed themselves. In most instances the nasal route should be used for insertion of a moderate-sized tube, and the tube should be allowed to remain in place, with regular feedings administered at two to four hour intervals.

The material inserted through a feeding tube should always be warmed to body temperature. Large volumes and rapid rates of injection should be avoided. The material should be concentrated and should contain the necessary amounts of salt and protein, as well as carbohydrate and fat, for the provision of caloric needs, as for any well balanced diet. Casein hydrolysates in powdered form can be used to provide an adequate nitrogen intake, especially when there is evidence (diarrhea) that whole protein is inadequately digested. Hydrolyzed protein can often be assimilated by sick patients in much larger amounts than whole protein.

PARENTERAL FEEDING

Parenteral injections are to be looked on as temporary substitutes for normal eating, should never be used in the absence of specific indications and should never be regarded with complacency. However, all physicians are familiar with the great benefits which have accrued from the availability of methods for the parenteral administration of water and salt to patients unable to take these essential substances by mouth. Under many circumstances the provision of other nutrient materials parenterally has as great importance for the welfare of the patient as does the parenteral administration of fluid.

Parenteral feedings should be planned always with the view of introducing, in the smallest practicable volume of fluid and in the shortest time, the quantities and proportions of materials required to meet the needs of the recipient as they have been outlined. Administration of excessive amounts of fluid over unnecessarily long periods distresses and exhausts patients and wastes material and the time of attendants.

Water.—Water is the vehicle for all parenteral nutrient materials. At times, however, it may be necessary to give some water in addition to the amounts required for solvent purposes. In this case, since pure water cannot be injected, dextrose solution must be used. The dextrose is burned, providing calories, while the water is left in the body. The proportions of sugar and water may be varied in accordance with the needs for these two constituents.

Enough water should be given to replace water lost by insensible and sensible perspiration, vomiting, diarrhea and exudation and, in addition, sufficient to provide 1,000 cc. of urine (1,500 cc. if there is high fever and reason to suspect excessive toxic destruction of protein). It is impossible to state with accuracy the exact amount needed because of the wide variation under different clinical conditions. However, when a patient is unable to take any fluid by mouth, his minimum requirements will rarely be less than 2,000 cc. per day and will usually be 3,000 cc. or more.

Salt.—The salt requirements of an individual can be adequately supplied over moderate periods by the injection of an adequate volume of isotonic solution of sodium chloride. The ratio of chloride to sodium is higher in such solutions than it is in body fluids, but, if enough is given to produce an adequate volume of urine, the kidneys will excrete the excess chloride, while retaining sodium to form the necessary bicarbonate. Sufficient potassium, magnesium, calcium and phosphate will be obtained from destruction of tissues.

A minimum of 5 Gm. of sodium chloride a day should be given to all patients. Febrile subjects or persons who sweat excessively should receive additional amounts. In case of vomiting, enough should be given to replace salt lost in the vomitus. For subjects receiving water by mouth vomitus may be estimated to contain the equivalent of about 5 Gm. of sodium chloride per liter. For subjects receiving no water by mouth, fluid lost by vomiting should be replaced by an equal volume of saline solution. If the patient has become dehydrated by vomiting before treatment is instituted, enough saline should be given at the onset of therapy to repair the deficit; this may require as much as 5 to 10 liters of salt solution.

In addition to the saline solution, sufficient water should always be given in the form of dextrose solution to provide for the insensible perspiration, which contains no salt. This amounts usually to from 1,000 to 1,500 cc. daily, depending on the size and metabolism of the subject.

Dextrose.—A certain amount of carbohydrate is required to prevent ketosis and to mitigate nitrogen loss. Dextrose solution also permits the administration of approximate amounts of water without salt. As little as 100 Gm. of dextrose a day will prevent the gross ketonuria of starvation (i. e., excretion of enough ketones to yield positive nitroprusside tests in the urine) but will not prevent rise of ketone bodies in the blood. It is better to give dextrose in two doses than one, in order to insure continuous utilization. To provide enough calories to minimize protein wastage more than 100 Gm. daily is required.

Only 5 per cent dextrose solution should be used subcutaneously. Concentrations from 5 to 50 per cent may be injected intravenously. It is generally held that solutions stronger than 10 per cent should be used only in small quantities in conditions of emergency, because such solutions are likely to cause venous thrombosis. Concentrations as great as 15 per cent may, however, be used if they are introduced slowly enough and if there is a free flow of blood around

the needle in the vein into which they are injected. A free flow of blood and slow introduction of fluid dilutes the solution at the point of injection to an innocuous concentration.

Dextrose can be added to solutions of salt and to protein hydrolysate without consideration of its osmotic contribution, provided it is injected so slowly that the dextrose is utilized as rapidly as it enters the body.

Protein.—Protein may be given as transfusions of whole blood, plasma, hydrolyzed protein or mixtures of amino acids.

Transfusions of whole blood and infusion of normal or concentrated plasma are not ordinarily thought of as nutritional measures. They are used for maintaining blood volume and circulation. Every hundred cubic centimeters of normal blood contains about 15 Gm. of hemoglobin and 4 Gm. of plasma protein. Hemoglobin is not suitable for replacement of tissue protein. However, injected plasma protein is metabolized to some extent, and so provides a source of nitrogen nourishment and protects, in part at least, against tissue wastage.

Solutions of hydrolysates of casein or other high grade proteins have recently been employed and represent a more physiologic method of providing nitrogenous food parenterally, because food protein is normally hydrolyzed before absorption. Of the various hydrolysates available only one has been demonstrated to be safe, well utilized and capable of maintaining nitrogen equilibrium in man. This hydrolysate is prepared from casein by digestion with pancreatic enzymes.¹ Acid hydrolysates should have certain theoretical advantages. Up to the present time it has been impossible to produce acid hydrolysates without destroying certain essential amino acids, notably tryptophan. Since means of circumventing this oxidation have been devised, satisfactory acid hydrolysates may become available. Mixtures of pure amino acids suitable for injection have definite advantages, but they are expensive and are not yet available in large quantity.

It has been demonstrated that the nitrogen requirements of animals and patients may be supplied for long periods by infusions of casein hydrolysate or pure amino acid mixtures. Like all other parenteral methods of feeding, however, this must be regarded as a temporary substitute for normal eating. It is a procedure, moreover, that requires careful attention to detail.

The casein hydrolysate is usually prepared in 5 per cent concentration dissolved in 5 per cent dextrose solution. When neutralized to a pH of 6.5, a liter of this solution contains 5 Gm. of sodium chloride. A liter of such a solution contains the equivalent of 50 Gm. of protein. Between 1.5 and 2 liters per day are therefore required to meet the basic demands of a normal man for protein. If solutions of casein hydrolysate are properly prepared, they should provoke no pyrogenic reactions. If they are injected too rapidly (faster than 500 cc. of a 5 per cent solution per hour in an adult of normal size) nausea or vomiting may be induced.

Fat.—At present no preparation of fat suitable for intravenous injection is available. Such preparations are feasible and have been made and used in emulsions up to 30 Gm. of fat per hundred cubic centimeters. The fat emulsions would have great theoretical value in any situation in which maintenance of a high caloric intake by parenteral injection is indicated, since each hundred cubic centimeters of a 30 per cent fat emulsion would provide 270 calories.

Vitamins.—During short sicknesses vitamins are not required, especially if the patients are not extremely malnourished. However, there are available preparations of certain vitamins for parenteral use, which should be given to patients who cannot eat a balanced diet during the course of prolonged disability. The most important ones are listed, with the daily doses recommended: thiamine (B_1), 10 mg.; riboflavin (B_2), 5 mg.; nicotinic acid, 20 mg.; ascorbic acid (vitamin C), 100 mg.

1. In this report all mention of casein hydrolysate for intravenous use refers to this enzymatic hydrolysate, the product of a single manufacturer. It is probable that other preparations will be developed in the future and proved by adequate clinical trial to be equally safe and efficacious.

GENERAL DIRECTIONS FOR PARENTERAL FEEDING

It is best to plan in advance the quantities of water and other constituents that will be required for the day, the times at which they are to be given and the routes by which they are to be administered. The total amounts of each component should first be estimated, after which they are translated into terms of parenteral materials that are available. Efforts should be made to use no more water than the patient requires.

Only isotonic solutions should be given subcutaneously, that is, normal saline or 5 per cent dextrose. The intravenous route is to be preferred to the subcutaneous for dextrose solutions, since dextrose tends to abstract water from the tissues at first because it diffuses more slowly than salt does. Saline solutions should not be reinforced with dextrose for subcutaneous injection because this makes a hypertonic solution. Dextrose can be added as desired to intravenous solutions because it is consumed, leaving only water. The temporary osmotic effect it produces is negligible or may be advantageous. If it is impossible to prepare the solutions fresh according to prescription, the desired concentration of dextrose may be made up by the addition of the required amount of sterile 50 per cent dextrose from ampules.

Solutions no stronger than 10 per cent of dextrose can be administered at the rate of 9 cc., or about 150 drops, per minute. If 15 per cent dextrose solution is used, the rate should be reduced to 6 cc., or about 100 drops, per minute. As a further precaution against venous thrombosis, the smallest possible needle (22 to 26) with a short bevel should be used, and care should be taken that it is held in place in such a way that the blood flow in the vein around the needle is not obstructed.

Casein hydrolysate solutions can be made up in 10 per cent concentration, which can be diluted to 5 per cent with dextrose solutions. Solutions prepared from the powder have a pH of about 5.0. They should be brought to a pH of 6.5 by the addition of sodium hydroxide before use.

EXAMPLES

1. It is desired to provide a nonfebrile patient who is unable to eat or drink but is not vomiting nor sweating and who has no large, exposed exuding surface for one day with water, salt and enough dextrose to prevent gross ketosis:

Water	1,500 to 2,000 cc.
Salt	5 to 8 Gm.
Dextrose	100 Gm.

1,000 to 1,200 cc. of 10 per cent dextrose and 500 to 800 cc. of isotonic solution of sodium chloride will meet these requirements closely enough. The total amount selected should preferably be given in two equal instalments.

2. If there has been a large antecedent deficit of salt as a result of vomiting, sweating or transudation, the proportions of salt may be increased.

For example:

Water	3,000 cc.
Salt	27 Gm.
Dextrose	100 Gm.

In this case 100 Gm. of glucose or 200 cc. of 50 per cent dextrose is added to 3 liters of isotonic solution of sodium chloride and divided into two portions in the same manner.

3. To meet the requirements for the nutrition of a patient who will be unable to take any food or fluids for some days and therefore should receive a nutrient which will provide an adequate amount of some protein substitute:

Water	3,000 cc.
Casein hydrolysate	100 Gm.
Dextrose	300 Gm.
Salt	10 Gm.

This will require 2 liters of 5 per cent casein hydrolysate, 5 per cent dextrose solution and 1 liter of 10 per cent dextrose solution, a total of 3,000 cc. Since the casein hydrolysate is neutralized, it will contain 5 Gm. of salt per liter, or 10 Gm. in 2 liters. Other convenient formulas can be devised by which the volume can be kept below 3,000 cc. The selected amount of solution should be injected over a period of about four hours or, preferably, in two equal instalments of two hours each. If the patient is given transfusions of whole blood or plasma, the amount of casein hydrolysate will be decreased.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Station Hospital, Dow Field, Bangor, Maine: Acute Abdominal Emergencies, Dr. Edward H. Risley, May 16.

At Dispensary, U. S. Naval Air Station, Brunswick, Maine: The Pneumonias and Other Respiratory Infections, Dr. Alexander M. Burgess, May 18.

At Station Hospital, Fort Banks, Boston: Blood Dyscrasias and Transfusions, Dr. William B. Castle, May 18.

At Dispensary, U. S. Naval Construction Training Center, Davisville, R. I.: Cardiac Neuroses, Cardiac Emergencies and Cardiac Rehabilitation, Drs. Samuel A. Levine and T. Duckett Jones, May 18.

At Fort H. G. Wright, Fishers Island, New York: Stomach, Biliary Tract and Intestinal Disorders, Dr. John C. Leonard, May 18.

At Station Hospital, Bradley Field, Windsor Locks, Conn.: Acute Abdominal Emergencies, Dr. Thacher W. Worthen, May 18.

At Camp Kilmer, New Jersey: Rickettsia Infections, Dr. William Sawitz, May 8; Water and Solute Balance in Health and Disease, Dr. John Eiman, May 29.

At England General Hospital, Atlantic City, N. J.: Malaria, Dr. W. Harding Kneedler and Dr. William Sawitz, May 2; Leishmaniasis, Dr. Julia Morgan and Dr. William Sawitz, May 16.

At Fort Monmouth, New Jersey: Diagnosis and Treatment of the Neuropsychiatric Patient in a Naval Hospital, Comdr. T. N. Spessard, May 3; Head Injuries: Their Diagnosis and Treatment, Dr. Temple Fay, May 10; Relationship of Pain and Tenderness to Body Mechanics, Dr. John C. Howell, May 17; Treatment of Burns and the Closure of Surface Defects by Skin Grafts and Flaps, Dr. Hans May, May 24; Viral Pneumonia, Dr. Hobart Reimann, May 31.

At Indiantown Gap, Pa.: Head Injuries: Their Diagnosis and Treatment, Dr. Temple Fay, May 3; Acute Glomerulonephritis (Trench Nephritis), Dr. George Morris Piersol, May 10; Blood and Plasma Bank and the Use of Its By-Products, Lieut. Clifford K. Murray, May 17; Malignancy as Seen in the Armed Forces, Dr. Stanley Reimann, May 24; Limitations of Fluoroscopy, Dr. W. Edward Chamberlain, May 31.

At Philadelphia Naval Hospital: Management of Pneumonia, Dr. Harrison F. Flippin, May 12; Limitations of Fluoroscopy, Dr. W. Edward Chamberlain, May 26.

At the U. S. Naval Hospital and U. S. Naval Academy Dispensary, Annapolis, Md.: The Pneumonias and Other Respiratory Infections, Dr. Luther L. Terry, May 19.

At Camp Lee, Virginia: Rheumatism, Lieut. Joseph L. Hollander, May 5; Prevention and Treatment of Wound Infections with Sulfonamides, Lieut. Col. Okla W. Sicks, May 12; Traumatic Surgery of the Abdomen, Dr. Frank S. Johns, May 19; Modern Diagnosis and Treatment of Pulmonary Tuberculosis, Dr. A. Barklie Coulter, May 26.

At Langley Field, Virginia: Anesthesia—Selection and Contraindications, Capt. Allen Widome, May 2; Psychosomatic Medicine, Lieut. Sidney U. Wenger, May 9; Traumatic Arthritis, Lieut. Comdr. Judson D. Wilson, May 16; Rheumatism, Major Terence Lloyd Tyson, May 23; Traumatic Surgery of the Abdomen, Dr. Robert L. Payne, May 30.

At Newton D. Baker General Hospital, Martinsburg, W. Va.: Crushing Injuries of the Extremities, Dr. Floyd Shaffer, May 1; Physiotherapy in War Wounded, Lieut. Comdr. Harry Etter, May 8; Psychosomatic Medicine, Dr. Jacob H. Conn, May 15; Shock, Dr. C. Martin Rhode, May 22; Prevention and Treatment of Wound Infections with Sulfonamides, Dr. Warfield M. Firor, May 29.

At Fort Eustis, Virginia: Psychoneurosis Among the Armed Forces, Dr. Claude L. Neale, May 11; Anesthesia—Selection and Contraindication, Capt. James P. Curran, May 25.

At Norfolk Naval Hospital, Portsmouth, Va.: Psychosomatic Medicine, Capt. Charles A. Spangler, May 11; Drainage of the Pleura, with Particular Relation to Chest Injuries, Dr. I. A. Bigger, May 25.

U. S. MARITIME SERVICE HOSPITAL CORPSMAN TRAINING

Lieut. Fred Edwards, regional public relations officer of the U. S. Maritime Service, recently announced that, for the first time in the history of the United States Merchant Marine, trained medical persons are now sailing aboard the freighters and tankers of our merchant fleet. About two years ago War Shipping Administration officials foresaw that medical doctors would become too few to permit their assignment to sea duty aboard merchant ships. As a result of this prediction the U. S. Maritime Service hospital corpsman-assistant purser school was founded at the Sheepshead Bay training station, New York. Men who qualify are given five weeks "boot" training for their life at sea, then a twelve weeks course learning anatomy, physiology, hygiene and sanitation, first aid, emergency treatment, nursing, pharmacy and clinical laboratory. Since they have to double as pursers in the merchant marine, they next receive training to keep the ship's records. Then they graduate to assignment of four weeks duty in a marine hospital, where they proceed from department to department, applying their theoretical training. On completion of the twenty-seven weeks course the seagoing medical men are ready to "put to sea."

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, April 15, page 1140)

MASSACHUSETTS

Malden Hospital, Malden. Capacity, 271; admissions, 5,299. Dr. D. M. Morrill, Director (assistant resident—June 1).
St. Luke's Hospital, New Bedford. Capacity, 339; admissions, 6,144. Mr. Scott Whitcher, Superintendent (interns—October 1).

NEW YORK

Beth David Hospital, New York City. Capacity, 187; admissions, 3,985. Mr. Harold M. Salkind, Executive Director (interns).
Bronx Hospital, New York City. Capacity, 389; admissions, 8,075. Mr. William B. Seltzer, Superintendent (four interns—October 1; assistant residents, surgery—June 1, October 1).

NORTH CAROLINA

Watts Hospital, Durham. Capacity, 225; admissions, 7,475. Mr. Sample B. Forbus, Superintendent (surgical resident).

PENNSYLVANIA

Women's Homoeopathic Hospital, Philadelphia. Capacity, 200; admissions, 2,790. Miss Mary A. Smith, Administrator (assistant resident).

TENNESSEE

Nashville General Hospital, Nashville. Capacity, 305; admissions, 6,138. Mr. T. F. Connally, Administrator (2 interns, residents, medicine, obstetrics-gynecology).

WASHINGTON

Western State Hospital, Fort Steilacoom. Capacity, 3,005; admissions, 889. Dr. W. N. Keller, Superintendent (resident, psychiatry).

WEST VIRGINIA

Kanawha Valley Hospital, Charleston. Capacity, 165; admissions, 4,414. Dr. G. B. Capito, Director (intern—July 1).

COMMUNITIES IN NEED OF PHYSICIANS

In addition to the four communities mentioned in THE JOURNAL April 8, page 1068, the United States Public Health Service has announced that the following communities have applied for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of \$200,000 for the relocation of physicians:

Summerville (Green County) Kentucky.
Prentiss (Jefferson Davis County), Miss.
Glenrock (Converse County) Wyoming.

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—The President has transmitted to Congress a draft of proposed changes in the program for supplying obstetric and pediatric care to the wives and infants of servicemen, as follows: (1) Extension of the program is recommended to include the wives and infants of army aviation cadets; (2) it is proposed that not more than 4 per cent of the federal appropriation may be allotted to the states for administrative expenses on the basis of need as determined by the chief of the Children's Bureau; (3) it is proposed that the amount of federal funds to be appropriated for the continuation of the program shall be immediately available rather than available for expenditure during the fiscal year beginning July 1. H. R. 4519 has been reported to the House, authorizing an appropriation of \$1,000,000 to enable the Administrator of Veterans' Affairs to furnish seeing eye dogs for blind veterans. H. R. 4559 has passed the House, making appropriations for the Navy Department for the fiscal year ending June 30, 1945. This bill continues the provision in existing law authorizing the use of appropriations for the Naval Establishment for the pay of commissioned medical officers who are graduates of reputable schools of osteopathy.

Bills Introduced.—S. 1820, introduced by Senator Russell, Georgia, proposes a federal appropriation of \$65,000,000 for the fiscal year ending June 30, 1945 and for each fiscal year thereafter such sum as may be necessary but not in excess of \$100,000,000 for any one fiscal year to enable the Secretary of Agriculture to provide federal assistance in the maintenance,

expansion and operation of school lunch and milk programs. S. 1824, introduced by Senator Smith, South Carolina, and Senator Ellender, Louisiana, also proposes federal appropriations to establish and maintain school lunch programs to provide lunches and nutrition instruction incidental thereto for children while attending school. H. R. 4383, introduced by Representative Bennett, Michigan, proposes to extend the old age and survivors' insurance benefits of the Social Security Act to the employees of states, political subdivisions thereof and instrumentalities of states or political subdivisions, and to self-employed individuals. H. R. 4500, introduced by Representative Rogers, Massachusetts, proposes to insure the furnishing of necessary artificial limbs and other appliances to disabled World War II veterans and to provide for appropriate instruction and training in their use. H. R. 4560, introduced by Representative Gearhart, California, proposes an appropriation of \$4,000,000 to construct a veterans' hospital and home of domiciliary care in central California, with a capacity of at least 1,000 beds, with necessary auxiliary structures, mechanical equipment, domiciliary and outpatient dispensary facilities, facilities for a diagnostic center and accommodations for all personnel. H. R. 4561, introduced by Representative Barry, New York, proposes an appropriation of \$1,500,000 to construct a new veterans' hospital and diagnostic center in the county of Queens, city and state of New York. H. R. 4584, introduced by Representative May, Kentucky, proposes to remove the limitation on the right to command of officers of the Dental Corps of the Army which limits such officers to command in that corps.

WOMAN'S AUXILIARY

Arkansas

Mrs. Elizabeth Walferman, chairman of legislation in Arkansas, sent out two thousand folders to be distributed at auxiliary meetings, showing how the two billion dollars of taxes in the proposed Wagner bill would be used for political medicine.

A student loan fund is maintained for doctors in Arkansas. They have made seventy-one loans and report that all but eight have been repaid.

District of Columbia

Dr. Tibor Kereker spoke on "Current Topics" at the January meeting. Generous donations were made by the auxiliary to the "In Bed Club" of the Washington Heart Association and to the District of Columbia Tuberculosis Association.

Florida

At a recent meeting of the Duvall County auxiliary, held at the home of Mrs. Raymond H. King, an address entitled "Civilizations Disappear" was given by Mrs. Harold S. Cohn, editor of the Jacksonville Journal. At the March meeting Comdr. M. J. Capron of the United States Naval Hospital at Jacksonville spoke on "Penicillin."

Pennsylvania

Reports of the Berks, Cambria, Center, Crawford, Huntingdon, Jefferson, Lehigh, Lycoming, Mifflin and Philadelphia county auxiliaries were published in the *Pennsylvania Medical Journal*. All meetings were interesting and well attended, but a striking feature was the amount of charity done. Crawford County auxiliary made 240 garments for charity; Delaware collected books for the service men's library and gave gifts to the Medical Welfare Society and the Salvation Army; Lycoming County auxiliary purchased three war bonds and gave \$15

to the Community Chest; Philadelphia auxiliary gave \$500 to the Aid Association of the Philadelphia County Medical Association, \$50 to the War Chest, \$5 to the Baby Welfare and \$100 to fill Christmas baskets for the needy. Also the members brought toys for the children in the Philadelphia General Hospital and made 142 nightgales for the same hospital.

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

April 22. "Men with Purple Hearts."

Speaker, Col. Augustus Thorndike, M. C., U. S. Army, Washington, D. C.

April 29. "Winds That Kill."

Speaker, Lieut. Edward L. Corey, U. S. N., Washington, D. C.

May 6. "They Shall Walk Again."

Speaker, Col. L. T. Peterson, M. C., U. S. Army, Washington, D. C.

Doctors at War will not be on the air May 13, having relinquished its time on that date to the Office of War Information for the broadcast of a nationwide program in connection with the Cadet Nurse Corps of the U. S. Public Health Service.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Advisory Board for New Medical College.—A physicians' advisory board for the new medical college of Alabama to be erected in Birmingham was appointed March 14 by Gov. Chauncey Sparks. Members are Drs. Wilbur M. Salter, Anniston, five year term; James S. McLester, Birmingham, four year term; William D. Partlow, Tuscaloosa, two year term, and Harry Lee Jackson, Birmingham, one year term.

Program on War Casualties for Civilian Physicians.—The professional staff of Northington General Hospital, Tuscaloosa, presented a program for the Tuscaloosa and Jefferson county medical societies March 20 to show the army's medical department's progress in the treatment of war casualties. Among the speakers were:

Lieut. Col. I. William Nachlas, M. C., Gun Shot Wounds.
Capt. Frederick T. Becker, M. C., Penicillin.
Lieut. Col. Thomas R. Wright, M. C., Pilonidal Cyst.
Lieut. Col. Nicholas Michael, M. C., Psychoneurosis.

John A. Andrew Clinical Meeting.—The John A. Andrew Clinical Society held a clinical session with the John A. Andrew Memorial Hospital at Tuskegee Institute, April 2-8. Among the speakers were:

Dr. Charles F. Sherwood, St. Louis, Plastic Repair of Weblike Scars.
Dr. Jacob Daley, New York, Typical Rhinoplasty.
Roscoe C. Brown, D.D.S., Specialist, U. S. Public Health Service, Address on Public Health.
Drs. Ulysses Grant Dailey and Leonidas H. Berry, Chicago, Medical and Surgical Management of Peptic Ulcer.
Dr. Wallace Byrd, Norfolk, Va., Syphilis as a Cause of Selective Service Rejection of Negro Youth.

There will be two symposiums, one on flight surgeon's activities, conducted by Lieut. Col. Richard C. Cumming, M. C., Major Harold E. Thornell, M. C., and Capt. Leroy R. Weeks, and one on mental hygiene conducted by Dr. Prince P. Barker, Tuskegee.

DISTRICT OF COLUMBIA

Meningitis Quarantine Ended.—The use of sulfonamide drugs recently made possible the waiving of the usual twenty-one day quarantine for persons exposed to meningitis. A three day quarantine of 300 women at Arlington Farms, Va., was in effect. Newspaper reports stated that four deaths had occurred in the outbreak. The first case was discovered in Louisiana Hall at Arlington Farms accommodating 334 women government workers. One woman died while being transferred from Arlington Farms to a hospital in Washington, a year old child died at Children's Hospital, Washington, one woman died in Suburban Hospital, Bethesda, Md., and another woman died in Freedmen's Hospital, Washington.

Physician Receives Spingarn Medal.—Dr. Charles R. Drew, assistant professor of surgery, Howard University College of Medicine, Washington, has been awarded the Spingarn Medal for 1943 for the highest and noblest achievement by an American Negro. The award, which was announced by the National Association for the Advancement of Colored People, went to Dr. Drew for his work while medical supervisor of a blood transfusion project sponsored jointly by the Blood Transfusion Association and the American Red Cross of New York. Dr. Drew, together with Dr. John Scudder, New York, was instrumental in developing techniques for the mass collection of blood plasma and the preservation of plasma for shipment overseas. The work was carried on during the years 1938-1941.

ILLINOIS

Rocky Mountain Spotted Fever.—A 23 year old man was reported to be ill with Rocky Mountain spotted fever in Alton, March 23.

Chicago

Northwestern Alumni Luncheon.—Northwestern University medical alumni will convene at a luncheon in the Palmer House May 17. The luncheon will be a feature of the annual meeting of the Illinois State Medical Society.

Course in Neuromuscular Anomalies of the Eyes.—The twelfth semiannual postgraduate course in neuromuscular anomalies of the eyes at the Children's Memorial Hospital will be conducted May 7-12 by Dr. George P. Guibor. Additional information may be obtained from the secretary of the course, 707 Fullerton Avenue, Chicago 14.

The Gehrman Lectures.—Dr. Harold S. Diehl, dean of the medical sciences, University of Minnesota Medical School, Minneapolis, will deliver the Gehrman Lectures for 1943-1944 at the University of Illinois College of Medicine May 17-19. His first lecture will be devoted to the cause and epidemiology of the common cold and the second to its prevention and treatment. The third lecture will be entitled "Some Recent American Epidemics."

Relocating Service Men and War Workers.—A conference will be held at the Drake Hotel, April 28-29, devoted to "Reabsorbing and Relocating Service Men and War Workers," under the auspices of the Society for the Advancement of Management. Included among the speakers will be representatives of the various phases of industry and some of the topics for discussion are guiding the service man's return to industry, organizing for relocation, problems of retraining, and the value of the job. A dinner session will be addressed by F. H. Kirkpatrick, manager of personnel administration, Radio Corporation of America, Camden, N. J., on "The Human Factor in Industrial Reconversion." One luncheon session will be addressed by a returned service man on "What the Man at the Front Thinks About His Return to Industry." Another luncheon session will be addressed by Charles W. Beese, M.E., head of the department of general engineering, Purdue University, Lafayette, Ind., on "The Influence of the War Effort on Management Education."

LOUISIANA

State Medical Meeting.—The sixty-fifth annual meeting of the Louisiana State Medical Society will be held at the Roosevelt Hotel, New Orleans, April 24-26, under the presidency of Dr. Charles C. deGravelles, New Iberia. Among the speakers on the program will be:

Dr. Waldo L. Treuting, New Orleans, and Byron J. Olson, P. A. Surg., U. S. Public Health Service, Clinical and Epidemiologic Features of an Epidemic of Severe Pneumonitis in Southwestern Louisiana.
John A. Lane, Surgeon, U. S. Public Health Service, Rupture of Intervertebral Disk.
Dr. Edgar Burns, New Orleans, Prostatic Obstruction and Some of Its Common Complications.
Dr. F. Walter Carruthers, Little Rock, Ark., Management of Shaft Fractures of the Long Bones.
Dr. Robert A. Katz, New Orleans, Psychosomatic and Medical Aspects of Peptic Ulcer.

At the president's dinner Tuesday evening Dr. Felix J. Underwood, Jackson, Miss., will deliver the annual oration. A feature of the state meeting will be a centennial exhibit reviewing the history of the *New Orleans Medical and Surgical Journal*. The woman's auxiliary to the state association will also hold its annual meeting at the Roosevelt Hotel, April 24-25.

MARYLAND

State Medical Meeting.—The Medical and Chirurgical Faculty of the State of Maryland will hold its annual session in Osler Hall, Baltimore, April 25-26, under the presidency of Dr. Jacob W. Bird, Sandy Spring, who will deliver an address entitled "Do We Need Federal Medicine?" Among other speakers on the program will be:

Dr. William H. F. Warthen, Towson, A County Health Program in War Time.
Dr. Arthur M. Shipley, Baltimore, Report of the Committee on Medical Service and Public Relations Regarding the Wagner-Murray-Dingell Bill.
Dr. Harry Arthur Cantwell, North East, The Toxic Effects of TNT and the Care of Workers in a Munition Factory.
Dr. Dexter M. Bullard, Rockville, The Practitioner as a Psychiatrist.
Dr. Albert Austin Pearre, Frederick, Fever of Obscure Origin.
Dr. Perry F. Prather, Hagerstown, Evaluation of the Pneumococcus Antigen as Measured by Pneumonia Prophylaxis in Maryland.

Dr. Allen O. Whipple, Valentine Mott professor of surgery, Columbia University College of Physicians and Surgeons, New York, will deliver the Trimble Lecture on "Hyperinsulinism in Relation to Pancreatic Tumors." A round table luncheon will be conducted by Drs. James G. Arnold Jr. and Bartus T. Baggott, Baltimore, on neurosurgery and tuberculosis respectively.

MASSACHUSETTS

Administrative Appointment at Harvard.—Alfred Le Roy Johnson, D.M.D., professor of clinical dentistry at Harvard University, has been appointed administrative officer of the new School of Dental Medicine at Harvard and associate dean of the faculty of medicine. Dr. Johnson graduated at Tufts College Dental School in 1904. He has served as professor of orthodontics at Tufts College, University of Michigan, University of Pennsylvania and as research associate in experimental genetics at Cornell University Medical College, New York. He was named to his professorship at Harvard in 1942.

NEBRASKA

State Medical Meeting.—The Nebraska State Medical Association will hold its annual meeting at the Hotel Fontenelle, Omaha, May 1-4, under the presidency of Dr. Albert L. Cooper, Scottsbluff. Among the out of state speakers will be:

- Dr. Hans C. S. Aron, Chicago, Some Clinical Implications of Recent Advances in the Knowledge of the Vitamins.
Dr. Oliver E. Van Alyea, Chicago, Modern Trends in Sinus Therapy.
Major Oliver R. McCoy, M. C., Public Health Importance of Tropical Diseases in Returned Soldiers.
Dr. Alfred W. Adson, Rochester, Minn., The Federal Challenge to the Practitioner of Medicine.
Dr. Clarence Dennis, Minneapolis, Surgical Treatment of Upper Abdominal Pain.
Dr. Will F. Lyon, Chicago, The Holding Power of Various Types of Screws in Bone.
Dr. Guy A. Caldwell, New Orleans, The Influence of Bacteriostatics and Anti-Biotics in the Treatment of Compound Fractures and Wounds.
Dr. Guy W. Leadbetter, Washington, D. C., The Problem of the Fractured Hip.
Dr. Willard R. Cooke, Galveston, Texas, A Study of Gonorrhea in Women.
Dr. Frederick H. Falls, Chicago, Abortion.

At an army session Lieut. Col. Nathan K. Jensen, M. C., will speak on "War Wounds of the Extremities," Lieut. Col. Edward B. Badger, M. C., "Medical Problems of Selective Service" and Lieut. Col. Edgar van Nuys Allen, M. C., will discuss "Functional Somatic Disorders in the Army" from the consideration of the internist and Lieut. Col. Clarke H. Barnacle, M. C., from the viewpoint of the psychiatrist.

NEW YORK

Personal.—Dr. Howard P. Carpenter has resigned as director of the laboratory of the Poughkeepsie board of health, effective May 1. Newspapers indicated that Dr. Carpenter would also resign as director of the laboratory of the Hudson River State Hospital and as deputy county medical examiner. He plans to go to Vermont, it was stated. Dr. Carpenter resigned as secretary of the Dutchess County Medical Society in 1941 after holding the position for twenty-seven years.—Dr. Bruno Leichtentritt has been appointed medical director of the Irvington House, an institution for the care of children with rheumatic heart disease in Irvington. Dr. Leichtentritt had been for more than five years a fellow of the Children's Fund of Michigan at the William J. Seymour Hospital, Eloise, according to *Detroit Medical News*.

Research Professorship in Pediatrics.—Dr. Edward M. Bridge, associate in pediatrics, Johns Hopkins University School of Medicine, Baltimore, has been named to a new research professorship in pediatrics at the University of Buffalo School of Medicine and in charge of the Statler pediatrics research department in the Children's Hospital, Buffalo. A floor of the hospital is being remodeled to house the laboratories, which have been provided by a grant of the trustees of the late E. M. Statler. Dr. Bridge will conduct research in drugs used in the treatment of epilepsy, the water and sugar requirement of sick children, the care of premature infants and other pediatric problems. At the university he will encourage and promote research in the diseases of children and stimulate research among medical students. Other changes at the school include the appointment of Oliver P. Jones, Ph.D., assistant professor of anatomy, as head of the department of anatomy, succeeding Donald Duncan, Ph.D.

New York City

Phi Delta Epsilon Lecture.—Dr. Arthur M. Fishberg will deliver the annual Phi Delta Epsilon lecture at the Long Island College of Medicine, Brooklyn, April 27, on "Recent Advances in Hypertension."

Changes in Sanitary Code.—A recent amendment to the city sanitary code provides that in no case shall a person previously convicted of a prostitutional offense be released from detention in a hospital designated by the city department of health unless such a person is no longer infected with a venereal disease in a communicable form. An additional amendment includes meningococcus meningitis (epidemic cerebrospinal meningitis) and typhus fever on a list of causes of death requiring the body of the deceased to be immediately and permanently sealed in a casket before removal from the place of death. Another amendment stipulates that all forms of plague shall be considered reportable diseases.

Gift of Apothecary Shop to Columbia.—A fully equipped "apothecary's shop of the eighties," complete with prescription counter, ointment jugs, iron mortars and shelves of samples of the "patent medicine" era, was presented formally to Columbia University College of Pharmacy by Arthur J. Kinsman, trustee of the school. It was installed as a permanent teaching exhibit in the college. According to the New York

Times, the prescription counter of the old store once stood in Roediger's Drugstore at 46 Market Street, which opened in the city in 1832. A wooden safe of the same age, which was purchased by the college of pharmacy in 1843, stands in a corner of the store. The *Times* states that the old "patent medicines," including "positive pain cure," gout remedies, magic oils, chill tonics and hair growers, are also included. A cordial for babies carries on its label "cure for colic and teething." A large porcelain jar with a perforated top is labeled "leeches" and was used to carry a ready stock of living cures for black eyes. In making the presentation to the college, Mr. Kinsman referred to the pharmaceutical products as reminders of the "patent medicine" era of the 1870's, "those glorious days of the wouldbe cure-alls, good for man or beast."

NORTH CAROLINA

Committees Named to Work with New Medical Care Commission.—On March 11 Governor Broughton announced the appointment of six subcommittees to work with the new North Carolina Hospital and Medical Care Commission. The committees are four year medical school for the University of North Carolina and hospital facilities, Dr. Paul P. McCain, Sanatorium, chairman; hospital and medical care for rural population, Thomas J. Pearsall, Rocky Mount, chairman; hospital and medical care for industrial and urban population, Charles A. Cannon, Concord, chairman; special needs of the Negro population, C. C. Spaulding, Durham, chairman; mental hygiene and hospitalization, Dr. James W. Vernon, Morganton, chairman, and hospital and medical care plans in other states, Dr. William M. Coppridge, Durham, chairman. The program of the newly appointed commission is designed to see that "no person in North Carolina shall lack adequate hospital care or medical treatment by reason of poverty or low income" (THE JOURNAL, March 25, p. 939).

State Medical Meeting.—The ninety-first annual session of the Medical Society of the State of North Carolina will be held at the Carolina Hotel, Pinehurst, May 1-3, under the presidency of Dr. James W. Vernon, Morganton. The preliminary program includes the following speakers:

- Col. Burr N. Carter, M. C., The Recent Trends in the Care of the War Wounds.
Judge L. R. Varser, Lumberton, Socialized Medicine From a Layman's Point of View.
Dr. Clarence H. Smith, New York, Ménière's Symptom Complex.
Dr. James W. White, New York, Ocular Muscle Paralysis—Their Diagnosis and Treatment.
Dr. Louis K. Diamond, Boston, Transfusion Reaction Due to the Rh Blood Type.
Dr. Neka B. Hon, Bethesda, Md., Recent Experiences in the Intensive Treatment of Syphilis.
Dr. James E. Paullin, Atlanta, Ga., President of the American Medical Association, Medical Planning for the Postwar Period.

At the president's dinner, Strickland Gillilan, Washington, D. C., author of the poem "Off Agin, On Agin, Gone Agin, Finnigin," will be the guest speaker.

OHIO

Food Information Center.—The Cleveland Health Council, in cooperation with the Cleveland Health Museum, has established a food information center at the museum. A nutritionist is available at the museum one evening a week to answer questions on food and food problems.

State Medical Meeting in Columbus.—The ninety-eighth annual meeting of the Ohio State Medical Association will be held at Neil House, Columbus, May 2-4, under the presidency of Dr. Clifford C. Sherburne, Columbus. Among the speakers on the program will be:

- Dr. Paul H. Holinger, Chicago, Cine-Bronchoscopy-Kodachrome Visualization of Endobronchial Pathology.
Dr. Oliver W. Hosterman, Columbus, Influenzal Meningitis.
Dr. Noel A. Gillespie, Madison, Wis., Factors that Influence the Success of an Anesthetic Administration.
Dr. Alexander A. Weech, Cincinnati, Hyperbilirubinemia in the New-born.
Dr. Edward Harlan Wilson, Columbus, Treatment of Fractures as Related to Functional Recovery.
Anton J. Carlson, Ph.D., Chicago, Fatigue.
Melvin H. Knisley, Ph.D., Chicago, Motion Picture—Knowless Malaria in Rhesus Monkeys.
Dr. Edward L. Turner, Nashville, Tenn., The Dysenteries.

Special features of the meeting will include a discussion on functional and organic diseases of the gastrointestinal tract by Drs. Andrew C. Ivy, Chicago, and Arthur W. Allen, Boston, and special quiz discussion sessions on medicine, including tropical medicine, psychiatry and occupational diseases. At the annual dinner Wednesday evening Mr. Grove Patterson, editor, Toledo *Blade*, will give the principal address, on "Britain in Wartime." Other groups meeting during the annual session will include the woman's auxiliary to the state association, the Ohio Society of Anesthetists, the Ohio chapter of the American College of Chest Physicians and the Ohio State Radiological Society.

OKLAHOMA

Paul Fesler Appointed Temporary Executive Secretary.—Mr. Paul H. Fesler, formerly superintendent of the University Hospitals, Oklahoma City, and of the University Hospitals, Minneapolis, has been named on a temporary basis to act as executive secretary during the absence of Mr. Richard H. Graham, according to the state medical journal. Mr. Fesler was once superintendent of the Wesley Memorial Hospital, Chicago, and has served as president of the American Hospital Association.

Conference on Poliomyelitis.—At the suggestion of crippled children's agencies in Texas, Oklahoma and Kansas, three states seriously affected by the poliomyelitis epidemic of 1943, a conference on basic planning for dealing with such epidemics was held in cooperation with the U. S. Children's Bureau in Oklahoma City, February 23-24. Dr. Abram L. Van Horn, assistant director for crippled children, division of health services of the Children's Bureau, U. S. Department of Labor, was chairman of the conference.

VIRGINIA

Special Society Meeting.—The Virginia Society of Ophthalmology and Oto-Laryngology will be addressed at its twenty-fifth annual meeting in Lynchburg, April 29, among others, by Drs. John H. Dunnington, New York, on "Complications of Cataract Extraction" and Arthur T. Ward Jr., Baltimore, "Local Use of Sulfadiazine, Penicillin, Tyrothricin and Radon in the Field of Otolaryngology." Dr. Emmett T. Gatewood, Richmond, is president of the group and Dr. Meade C. Edmunds, Petersburg, is secretary.

The Stuart McGuire Lectures.—The fifteenth annual Stuart McGuire lectures were delivered at the Medical College of Virginia, Richmond, April 5-6. Dr. Winfred Overholser, superintendent, St. Elizabeths Hospital, Washington, D. C., spoke on "Modern Trend in Psychiatry" and Lieut. Col. William C. Menninger, chief of the army's division of neuropsychiatry, "Psychiatric Problems in the Army." The lectures were given in conjunction with a postgraduate clinic devoted this year to a series of psychiatric subjects.

WISCONSIN

Winners in Essay Contest.—The Milwaukee Academy of Medicine announces that first prize in the Horace Manchester Brown Memorial Essay Contest went to Dr. Robert H. Feldt, Milwaukee, for his paper entitled "Sulfanilamide as a Prophylactic Measure in Recurrent Rheumatic Fever: A Controlled Study Involving 131 'Patient-Seasons.'" Second prize went to Dr. Nathan M. Grossman, Milwaukee, for his paper on "The Left Auricle." The prizes were \$100 and \$50 respectively. The academy also announces that no award was made for the Rogers Memorial Essay Contest because, in the opinion of the judges, no papers were deemed worthy (THE JOURNAL, June 19, 1943, p. 553).

GENERAL

Examinations in Internal Medicine.—The American Board of Internal Medicine will hold oral examinations in Chicago, June 8-10. The closing date for the acceptance of applications is May 20. Communications should be addressed to the assistant secretary-treasurer of the board, Dr. William A. Werrell, 1301 University Avenue, Madison 5, Wis.

Association of Basic Science Boards Organized.—The American Association of Basic Science Boards was organized at a meeting in Chicago, February 15, with Orin E. Madison, Ph.D., Detroit, of the Michigan board, as president. Other officers include Charles D. Byrne, Ed.D., Oregon board, Eugene, vice president; Charles H. Carter, D.Sc., Iowa board, Fairfield, secretary-treasurer, and John S. Latta, Ph.D., Nebraska board, Omaha, and Rev. Nicholas H. Serron, O.P., Rhode Island board, Providence, executive committee.

Membership of Board of Neurological Surgery.—At a meeting of the American Board of Neurological Surgery in New York, March 26, it was voted unanimously that the number of members of the board nominated by the Society of Neurological Surgeons should be reduced from five to four and that the American Academy of Neurological Surgery should be invited to nominate one of their neurosurgical members to the board for a term of office, to begin in the summer of 1944.

Association of Cereal Chemists.—The thirtieth annual meeting of the American Association of Cereal Chemists will be held at the Nicollet Hotel, Minneapolis, May 23-26. A feature of the meeting will be a symposium on protein nutrition conducted by Richard J. Block, Ph.D., New York, "Eval-

uation of Food Proteins from the Essential Amino Acid Composition"; Herman J. Almquist, Ph.D., Berkeley, Calif., "Effective Use of Feed Proteins in Nutrition of the Chick," and Dr. Paul R. Cannon, Chicago, "The Nutritional Assay of Proteins by Means of the Adult Hypoproteinemic Rat."

Pan American Conference of National Directors of Health.—The fifth Pan American Conference of National Directors of Health will be held in Washington, April 22-29, to discuss wartime and postwar health programs. The subjects include air navigation quarantine, immigration, improved national and international disease reporting, aerial navigation, port sanitation, quarantine regulations and the adoption of an international health certificate. One feature of the meeting will be the preparation of a program for the XII Pan American Sanitary Conference, to be held in Caracas, Venezuela, in 1946. Health and hygiene authorities of the Latin American countries will be represented. Canada will also be represented.

Fund for Research in Psychosomatic Medicine.—The National Committee for Mental Hygiene announces the establishment of a fund for research in psychosomatic medicine to stimulate and subsidize research in the psychosomatic aspects of the diseases chiefly responsible for disability and death. The fund will be directed by Dr. Edward Weiss, Philadelphia, and administered under the direction of Dr. George S. Stevenson, New York, medical director of the National Committee for Mental Hygiene. Projects will be considered by a committee composed of Drs. Charles A. Aldrich, Rochester, Minn., Franz Alexander, Chicago, Stanley Cobb, Boston, John Romano, Cincinnati, and Lieut. Col. William C. Menninger. Additional information may be obtained from Dr. Weiss, 269 South 19th Street, Philadelphia 3.

Borden Prize Awarded to William Clark.—At the meeting of the American Chemical Society in Cleveland, April 5, the Borden Company Prize for 1944 of \$1,000 for research in the chemistry of milk was presented to William Mansfield Clark, Ph.D., DeLamar professor of physiologic chemistry at the Johns Hopkins University School of Medicine, Baltimore, and chairman of the division of chemistry and chemical technology at the National Research Council, for his contributions to the application of acid-base theory to laboratory and plant practice. Science reports that, as a result of his work and writings, the old haphazard and often irrational procedures in the dairy industry and other industries have been fruitfully transformed during the past years to precise scientific manipulations.

Dr. Strode Succeeds Wilbur Sawyer at Rockefeller Foundation.—Dr. George K. Strode, associate director of the International Health Division of the Rockefeller Foundation in charge of the division's work in Europe, has been appointed director of the division to succeed Dr. Wilbur A. Sawyer, who will retire, effective September 1. Dr. Sawyer, who graduated at Harvard Medical School, Boston, in 1906, was appointed state director of the International Health Board in 1919. He has served as assistant regional director for the east, director of public health laboratory service, associate director of the International Health Division and, since 1935, director. Dr. Strode graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1912, receiving his master's degree in public health at Harvard in 1927. He has been a member of the International Health Division of the foundation since 1920, having been chosen a member for one year in 1916. He was assistant director for activities in Europe and the Near East from 1927 to 1938, when he became associate director. He was chairman of the Paris office from 1932 until 1938.

Nutrition Grants.—Grants totaling \$131,000 for research projects in nutrition were approved by the board of trustees of the Nutrition Foundation at a meeting in New York, April 5. The grants are distributed among twenty-three colleges and universities in the United States and Canada and include renewal of grants for thirty-one research projects already in progress and three additional grants for studies at Harvard, Yale and Cornell. According to a release from the foundation, grants having greatest value thus far were "those dealing with army rations, human protein requirements, maternal and infant nutrition, dental caries and human vitamin requirements." The new grants authorized at the recent meeting include:

Harvard University, Cambridge, for training physicians in the human and public health aspects of nutrition.

Yale University, New Haven, Conn., in support of maternal and infant nutrition studies, based on carefully controlled nutrient intakes of primates (monkeys), other animals having been found not so satisfactory for the study of numerous human problems such as dental caries, physical deformities or functional impairment.

Cornell University, Ithaca, N. Y., for study of the biochemical mechanism of converting starches and sugar into fat.

Meeting of Bacteriologists.—The forty-fifth annual meeting of the Society of American Bacteriologists will be held at the Hotel Pennsylvania, New York, May 3-5, under the presidency of Ira L. Baldwin, Ph.D., Madison, Wis. Among the speakers will be:

- Merton F. Uter, B.A.; Lester O. Krampitz, Ph.D., and Chester H. Werkman, Ph.D., Ames, Iowa, Oxidation of Acetyl Phosphate by *Micrococcus Lysodeikticus*.
Dr. Harold E. Pearson, Ann Arbor, Mich., The Distribution of Influenza Virus Type A in Infected Eggs and the Survival of Virus Under Certain Conditions of Storage.
Gordon C. Brown and Dr. Thomas Francis Jr., Ann Arbor, Mich., Embryonic Chick Antigens for Complement Fixation with the Viruses of Eastern and Western Equine Encephalomyelitis.
Maurice R. Hilleman, S.B., and Dr. Francis B. Gordon, Chicago, Immunological Studies on the Relationships of the Psittacosis-Lymphogranuloma Group of Viral Agents.
Reuben L. Kahn, Sc.D., and Elizabeth B. McDermott, Ann Arbor, The Verification Test in Postvaccination Cases.
Albert Milzer, Ph.D., Dr. Philip Lewin and Dr. Sidney O. Levinson, Chicago, Studies on the Influence of Fatigue, Chilling and Trauma on Experimental Poliomyelitis.
Selman A. Waksman, Ph.D., New Brunswick, Mode of Action of Antibiotic Substances.
Albert C. Hunter, Ph.D., Washington, D. C., Standardization of Assay of Penicillin.
Dr. William S. Tillett, New York, An Analysis of the Therapeutic Action of Penicillin Based on the Clinical Response of Patients and Correlated Laboratory Findings.
Elaine Uppdyke, M.S., and Martin Frobisher Jr., Sc.D., Baltimore, Group B Streptococci and Malignant Diphtheria.

There will be round table discussions on recollections of the early days of bacteriology in New York City, problems concerning anaerobic bacteria, taxonomy and primary atypical pneumonia.

LATIN AMERICA

Health Activities in Latin America.—*Cinchona*.—Studies to determine the practicability of developing new cinchona plantations in Mexico are being conducted by the department of health, according to the *New York Times*, April 9. About 60,000 cinchona plants are under cultivation in the state of Chiapas. Production of quinine eventually may be sufficient to meet all domestic requirements and provide an export surplus, it was stated. Important progress has been made in the cooperative hemispheric effort to cultivate quinine-yielding cinchona, according to William C. Davis of the staff of the United States Office of Foreign Agricultural Relations in the *Inter-American Economic News*. Quinine supplies for the United Nations are being obtained from Guatemala, Venezuela, Colombia, Ecuador, Peru and Bolivia, which countries, with Mexico, Costa Rica and Brazil, are cooperating with the United States to develop in the Western Hemisphere a sound cinchona industry. Colombia has contributed more bark from wild or native stands during the past year than any other country in this hemisphere. It was stated that in Colombia the bark from a related plant, botanically known as *Remijia*, contains enough quinine to make its harvest profitable under existing conditions. In Brazil cinchona production is still in the experimental stage. Small plantings have been made in the mountainous regions bordering the state of Minas Gerais, and cinchona seedlings supplied by the United States have been put out at Campinas and Baracca. The United States, through the department of agriculture and the foreign economic administration, is cooperating with all these cinchona producing countries. The foreign economic administration is concerned with the procurement of cinchona and such work as will expedite availability of high quality bark, and the department of agriculture is aiding through research, technical advice and demonstration in the growing of the plants. It is also sending quality seedling stock to the most promising production areas.

Physician Heads Identification Division.—Dr. Hubert Wallau, who is now in the United States studying traumatic surgery under the auspices of the Institute of Inter-American Affairs, an agency of the Office of Inter-American Affairs, is head of the identification division in Rio Grande do Sul, Brazil. Dr. Wallau is studying at the Boston City Hospital. In Brazil he is a member of the staff of the Santa Casa de Misericordia Hospital in Porto Alegre.

Society News.—Drs. Egidio S. Mazzei and Carlos Reussi were elected president and secretary, respectively, of the Society of Internal Medicine of Buenos Aires for 1944.—Dr. Ramón N. Ibarra Perez was chosen president and Dr. Guillermo Gonzalez Peris secretary of the Cuban Society of Dermatology and Syphilology for 1944.

New Publication.—The Argentine Psychoanalytic Association recently began the publication of its official organ, *Revista de psicoanalisis*.

Graduate Course in Legal Medicine.—A two year postgraduate course in legal medicine has been created by the Faculty of Medicine at the University of La Plata, Buenos Aires, Argentina, for physicians who wish to become specialists in this field. The course will be under the direction of Dr. José

Belbey, professor of legal medicine of the Faculty of La Plata School of Medicine and adjunct professor of medicine in the School of Medicine of Buenos Aires, and includes lectures, seminars and actual clinical work. During the first year the curriculum includes legal medicine, clinical psychiatry, medicolegal toxicology, legal medicine and occupational diseases. The second year encompasses forensic psychiatry, criminology and principles of penal law, medicolegal necropsy and medicolegal aspects of workmen's compensation. Those completing the course will receive a specialist's diploma, according to the *Journal of Criminal Psychopathology*.

Hospitals for the Amazon.—Harold B. Gotaas of the Health and Sanitation Division, Office of Inter-American Affairs, has recently prepared a review on the hospital development program in Latin America entitled "Hospitals for the Amazon." The program, he points out, is being done as part of inter-American health and sanitation measures recommended by the Rio de Janeiro conference of American Foreign Ministers in January 1942, which measures have evolved into a continental program to improve health and sanitation conditions in areas important to the development of hemisphere resources and defenses. Nineteen of the American republics, including the United States, are participating. Mr. Gotaas, who is a sanitary engineer, discusses the project as it is carried out in the Amazon Basin, covering the territory of Brazil, Bolivia, Peru, Ecuador, Colombia and Venezuela. While this area has great tropical forests, wood is not suitable for the building materials, clay and brick being used instead, he says. New construction included a 20 bed hospital in Guayaramerin and in Pucallpa, Peru. In Iquitos a 100 bed hospital was one of the first projects in the Peruvian health program, which includes a 20 bed children's ward, 20 bed women's ward, 20 bed men's ward, a surgical section with operating and x-ray room, administrative wing with outpatient department, and kitchen and general service wing, water and sewerage facilities. At Santarem a 50 bed hospital, also of tile and brick construction, contains operating rooms, outpatient department and pharmacy. In addition many health centers and dispensaries are being erected.

New Monthly Epidemiologic Report.—With the March issue the *Monthly Report on Epidemiological and Vital Statistics* begins its regular appearance under the auspices of the Pan American Sanitary Bureau, Washington 6, D. C. The report replaces the tables on pestilential diseases which were published in the *Boletín* of the Pan American Sanitary Bureau. The purpose of the publication is to convey, in the quickest possible manner, to the national and international public health organizations, as well as to all other interested parties, the available information on the incidence and mortality of certain communicable diseases, as well as other biostatistical data on various countries, particularly those in the Western Hemisphere.

Personal.—Dr. George C. Dunham, executive vice president of the Institute of Inter-American Affairs, and assistant coordinator in charge of the basic economy department, Office of the Coordinator of Inter-American Affairs, has been promoted from brigadier general to major general, medical department, A. U. S., with rank from February 22. According to the *Newsletter*, Division of Health and Sanitation, of the coordinator's office, Clair E. Turner, Dr.P.H., of the professional training and health education section of the division recently spent time in Brazil, Peru and Chile to consult with respective field parties on health education programs.

FOREIGN

Typhus Epidemic Among Yemenite Refugees.—Professor I. J. Kligler, professor of bacteriology and hygiene, Hebrew University of Jerusalem, left with three Palestinian Jewish nurses for Aden by plane in February to organize medical relief for 1,600 Yemenite refugees, among whom a typhus epidemic has broken out. The mission was sent at the request of the Aden government, according to the *New's Bulletin* published by the American Friends of the Hebrew University.

CORRECTION

Allergy to Lan-O-Kleen Soap.—In THE JOURNAL, Dec. 11, 1943, page 991, appeared an abstract of a workman's compensation case regarding an allergy to Lan-O-Kleen soap, which a workman was required to use in the course of his employment. The abstract of the case emphasized the fact that the employee had used the lava soap for six or seven years and did not develop an allergy until he adopted the Lan-O-Kleen soap. The concluding sentence of the next to last paragraph read "Lava soap was a poison to the workman, and his injury was compensable." In this sentence the words "lava soap" should have been "Lan-O-Kleen soap."

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 18, 1944.

The National Health Service: Attitude of the British Medical Association

A mass meeting of the Metropolitan Counties Branch of the British Medical Association was held recently to hear an address by Dr. Charles Hill, secretary, on the White Paper, which he described as the government's first thoughts on the Beveridge scheme to provide a comprehensive medical service for all who wanted it, irrespective of income limit. Dr. Hill said he believed that the general reaction of the profession to the three "freedoms" set out in the paper was that they were worthy of full support, but the real test would be the extent to which these freedoms found expression in the administrative machinery and arrangements. They are: 1. Freedom for people to use or not to use the facilities; no compulsion for either patient or doctor; no interference in the making of private arrangements at private cost, if any one prefers to do so. 2. Freedom for people to choose their medical advisers. 3. Freedom for the doctor to pursue his professional methods in his own way. The personal doctor-patient relation was to be preserved and the whole service founded on the "family doctor" idea.

The proposal for a corporate body, Dr. Hill pointed out, was not accepted by the government. But whereas comprehensive service was preached in all other directions, he said, there was no comprehensive service planned for the center; rather the medical services would remain distributed among a multitude of government departments. An advisory body, the Central Services Council, was to be set up, consisting of both medical and lay members appointed by the minister, not specially elected for the purpose by the professional organizations. This, Dr. Hill thought, was wrong.

At the periphery, he continued, instead of the hoped for fundamental recasting of local government there was a compromise. There would be not fewer local authorities but more. The hospital services had to be dealt with regionally, but Dr. Hill thought it was regrettable that in creating the new type of body, the Joint Authority, the government had been unwilling to dilute the democratic principle by including, in the public interest, some nonelected professional and expert members.

On administration as a whole he said that the arrangements spit the profession into four groups: general practitioners in separate practice, general practitioners in health center practice, consultants appointed by voluntary hospitals and consultants appointed by local authorities. There was also a group whose position, Dr. Hill felt, must be viewed with considerable anxiety—their colleagues of the public health service. Dr. Hill also had misgivings as to the health centers. The Association had urged that these should be initiated for a period of experiment with a view to discovering the right type of group practice. This might be (1) the center with general practitioner beds, (2) the diagnostic center, concentrating on special methods of investigation and possibly treatment, (3) the true health center, in which both preventive and curative services are integrated or (4) the communal surgery. The last and least advanced of these types was adopted in the White Paper.

When practitioners participate in group practice health centers, remuneration is to be by salary or similar arrangement. The government needed to be converted on that issue, Dr. Hill thought. He saw nothing inconsistent with group practice in continuing a method of remuneration within the health center which bore a relationship to the amount of work done. On the whole, he said, there was much that was sound and attractive in the health center conception, but the attitude of the profes-

sion must be tinged with caution lest, without sufficient experiment, the project be pushed by those who sought not health centers but a particular form of salaried employment under local authorities.

Two things, he said, made Dr. Hill suspicious. The consent of the Central Medical Board was necessary before new practitioners could participate in the service or existing practitioners start in new areas. The argument was that practitioners must be prevented from going into areas already sufficiently staffed. There might be a case for that, Dr. Hill acknowledged, but the White Paper advocated that such approval must be given to every practitioner desiring to enter the public service. The board is to be a civil service structure under the general direction of the minister. Again, newly qualified doctors will be required to give full time in the public service in their early years if necessary. The association, Dr. Hill felt, was not prepared to accept this form of civil direction and conscription. He pointed to the danger that by administrative procedure, bit by bit, the one thing to which the profession was fundamentally opposed—a whole time salaried service—could be introduced.

The proposals of the White Paper will soon be discussed in Parliament. It is evident that any opposition from the medical profession will be in connection with such details as are mentioned here. Every proposal is open to debate before it becomes law.

BOLIVIA

(From Our Regular Correspondent)

La Paz, Feb. 21, 1944.

Typhoid Epidemic in La Paz

During the last two months there has been a severe epidemic of typhoid in Bolivia's largest city, La Paz. A minor epidemic developed in Cochabamba. Official estimates, based on doctors' reports, indicate that there have been about 200 cases and some 50 deaths, but private estimates place both figures about four times as high because of hidden cases. Lack of sanitary supervision over the open market sellers of vegetables, fruit and meat, the lack of good general hygienic conditions and the deficient sewage disposal systems in some suburbs are chiefly responsible for the fast spread of the epidemic, which apparently spreads from undetected sources every few years. Local health authorities have proceeded with immediate vaccination with Bolivian made vaccines, but out of a population of about 300,000 people only a few presented themselves. Also the Servicio Cooperativo Interamericano de Salud Pública, supported by the office of the coordinator of Inter-American affairs, vaccinated with American made vaccines, but it seems that a large number of people did not report for revaccination. The General Hospital isolation ward, with 51 beds available, soon became overcrowded. Fortunately, La Paz drinking water is acid, with an estimated pH of from 5 to 6, so that no contamination occurred this way. The public was instructed by newspapers and radio about the safety measures to be adopted. Lack of available funds makes it hard to carry out any thorough measures against future epidemics of this kind.

A Branch of the International College of Surgeons in Bolivia

On January 12 the Bolivian branch of the International College of Surgeons was founded in La Paz in the presence of the former United States ambassador to Bolivia, Mr. Pierre de Boale, and the vice president of La Paz University, Dr. Ernesto Navarro. The chairman of this new institution, Dr. Enrique St. Loup, in his inauguration speech mentioned that the Bolivian branch of the institution was founded in response to an invitation received a year ago from the headquarters of the college in Washington, D. C. The program of this first meeting included the exhibition of a La Paz film showing the different phases of a subtotal thyroidectomy.

Deaths

John Henry Hale, Nashville, Tenn.; Meharry Medical College, Nashville, 1905; professor and chairman of the department of surgery at his alma mater, where he had been associate director of the tumor clinic; past president of the National Medical Association; served as medical director of the health department at the Tennessee State College; at one time surgeon in chief at the Millie E. Hale Hospital; was to have been awarded a Distinguished Service Medal this month at the John A. Andrew Clinic at Tuskegee Institute, Ala., for outstanding contributions to the Negro medical profession; chairman of the hospital committee and chief, surgical department, George W. Hubbard Hospital of Meharry Medical College, where he died March 27, aged 62, of myocardial insufficiency.

Arnold Schwyzer • St. Paul; Universität Zürich Medizinische Fakultät, Switzerland, 1888; member of the founders group of the American Board of Surgery; professorial lecturer emeritus at the University of Minnesota Medical School, Minneapolis; formerly professor of clinical surgery at the Minneapolis College of Physicians and Surgeons, the Medical Department of Hamline University; member of the Minnesota Pathological Society, Minnesota Academy of Medicine, Swiss Surgical Society, American Surgical Association and the Western Surgical Association; fellow of the American College of Surgeons; for many years surgeon on the staff of St. Joseph's Hospital; died February 19, aged 79, of carcinoma of the pancreas.

Peter Lyons Harvie • Troy, N. Y.; Harvard Medical School, Boston, 1911; a member of the founders group of the American Board of Surgery; formerly instructor in surgery at the Albany Medical College, Albany; fellow of the American College of Surgeons; served in the medical corps of the U. S. Army on the Mexican border and as a captain, commanding ambulance company number 5, third division, American Expeditionary Forces, in France during World War I; surgeon, Samaritan Hospital, Eddy Memorial Foundation and Day Home Clinic; thoracic surgeon, Pawling Sanatorium, Wyncottskill; consulting surgeon, Henry W. Putnam Memorial Hospital, Bennington, Vt.; died February 4, aged 58, of heart disease.

Cyril Sumner • Rochester, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1911; served as consultant in general surgery and instructor in surgery at the University of Rochester School of Medicine and Dentistry; past president of the Rochester Academy of Medicine; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; served during World War I; director of the surgical department, Genesee Hospital; attending surgeon, Monroe County Hospital; for many years on the staff of the Strong Memorial Hospital; died February 7, aged 61, of diverticulitis.

Louis Provance McCormick • Connellsville, Pa.; Jefferson Medical College of Philadelphia, 1891; retired from the Pennsylvania National Guard in 1915 with the rank of lieutenant colonel after twenty-one years of service; served during the Spanish-American War and the Philippine Insurrection; chairman of the Fayette County Draft Board number 2 during World War I and the Fayette County Selective Service Board number 1 during World War II; on the staff of the Connellsville State Hospital; treasurer, board of directors, Carnegie Free Library, and director of the Second National Bank; died February 6, aged 77, of angina pectoris.

Robert J. Walker • Saugatuck, Mich.; Trinity Medical College, Toronto, Ont., Canada, 1895; past president of the Allegan County Medical Society and the Ottawa County Medical Society; first lieutenant in the medical corps of the U. S. Army during World War I, serving as commanding officer of a hospital train; at one time village health officer and member of the school board; on the staff of the Allegan Health Center, Allegan, and formerly on the staff of the Community Hospital, Douglas; for many years a director and president of the Fruit Growers State Bank; died February 1, aged 74, of lymphatic leukemia.

Raymond Welsh Holt • Niagara Falls, N. Y.; University of Buffalo School of Medicine, 1928; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; served overseas with the American Expeditionary Forces during World War I; attending pediatrician, Mount St. Mary's and Niagara Falls Memorial hospitals; formerly on the staff of the Children's Hospital,

Buffalo; director, board of Beaman Foundation Child Guidance Clinic; member of the Rotary Club; died in the Buffalo General Hospital, Buffalo, February 4, aged 50, following an operation.

Fred Meade Anderson, Nickerson, Kan.; St. Louis University School of Medicine, 1904; member of the Kansas Medical Society; died in St. Elizabeth Mercy Hospital, Hutchinson, January 17, aged 64, of cerebral hemorrhage.

John Ashburton Cutter, New York; Albany Medical College, New York, 1886; joint author of "Food: Its Relation to Health and Disease"; died in St. Vincent's Hospital February 13, aged 80, of arteriosclerotic heart disease, cerebral arteriosclerosis and bronchopneumonia.

George Bernard Grady, Watervliet, N. Y.; Albany Medical College, 1896; at one time a druggist; for many years medical supervisor of the schools and police surgeon; served as health officer; on the staff of the Troy Hospital, Troy; died February 15, aged 73, of heart disease.

Henry Hill Haskell, Carmel, Calif.; Harvard Medical School, Boston, 1893; served as assistant in ophthalmology at his alma mater; formerly a member of the American Ophthalmological Society and the New England Ophthalmological Society; for many years on the staff of the Massachusetts Charitable Eye and Ear Infirmary, Boston; died February 14, aged 75, of pulmonary edema and acute dilatation of the heart.

William Ellery Hughes • Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1880; at one time professor of clinical medicine at the Medico-Chirurgical College of Philadelphia; consulting physician to the Philadelphia General, Misericordia and Presbyterian hospitals; accompanied Admiral Robert E. Peary on one of his early polar expeditions; died March 16, aged 87, of arteriosclerotic cardiopathy.

Sidney Hughes Jacobs, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1910; formerly passed assistant surgeon in the U. S. Public Health Service reserve; served during World War I; died February 15, aged 60, of coronary thrombosis.

Sherman Willott Jenkins, Detroit; Meharry Medical College, Nashville, Tenn., 1926; on the staffs of the Wayne Diagnostic and Parkside hospitals; died in Jackson, Mich., February 20, aged 47, of coronary occlusion.

Christopher George Johnson • Milwaukee; Trinity Medical College, Toronto, Ont., Canada, 1895; died February 18, aged 73, of myelogenous leukemia.

John Frank Johnson, Chicago; Jenner Medical College, Chicago, 1903; died February 19, aged 72, of chronic myocarditis.

Edward Charles Jones • Montclair, N. J.; Tufts College Medical School, Boston, 1927; member of the American Society of Anesthetists, Inc.; on the staffs of the Mountainside, Community and St. Vincent's hospitals, Montclair, and the Essex County Hospital for Contagious Diseases, Belleville; died February 16, aged 52, of congestive heart disease.

Henry Turner Kendall, Columbia, S. C.; Hospital College of Medicine, Louisville, Ky., 1889; died in the Columbia Hospital February 21, aged 83, of pneumonia.

Herbert L. Lake, Lyons, N. Y.; Eclectic Medical Institute, Cincinnati, 1882; died January 30, aged 83, of chronic nephritis and arteriosclerotic heart disease.

Charles C. Landon, Battle Creek, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1885; member of the Michigan State Medical Society; on the staffs of the Leila Y. Post Montgomery and the Community hospitals; formerly a member of the board of education and president of the Y. M. C. A.; died February 7, aged 84, of diabetes mellitus.

Charles Edwin Legg • South Sioux City, Neb.; Kansas City (Mo.) Hahnemann Medical College, 1904; served in France during World War I; on the staff of the Methodist Hospital, Sioux City, Iowa; surgeon for the Burlington Railway; died February 15, aged 68, of coronary occlusion.

Theophilus H. Littell, Ville Platte, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1898; for many years coroner of Evangeline parish; died February 11, aged 69, of coronary thrombosis and cardiac insufficiency.

David Livingstone • Centralia, Wash.; Trinity Medical College, Toronto, Ont., Canada, 1904; served during World War I; captain in the medical reserve corps of the U. S. Army, not on active duty; formerly medical superintendent of the Western State Hospital, Fort Steilacoom; died February 15, aged 65, of hypostatic pneumonia following influenza.

James C. MacGregor, Flint, Mich.; Detroit College of Medicine, 1898; also a pharmacist; member of the Michigan State Medical Society; past president of the Genesee County Medical Society; member of the board of managers of the Hurley Hospital for many years; served on the board of directors of the Industrial Savings Bank, the Union Industrial Trust and Savings Bank and the National Bank of Flint; died February 29, aged 72, of cardiac thrombosis.

Finley Joseph McRae * Albion, Neb.; Western University Faculty of Medicine, London, Ont., Canada, 1902; secretary of the Boone County Medical Society; served as a captain in the medical corps of the U. S. Army during World War I; a director of the Nebraska Tuberculosis Association; past president of the Kiwanis Club; died in Our Lady of Lourdes Hospital, Norfolk, January 5, aged 67, of cerebral hemorrhage.

Hovsep Hagop Mahdesian, Fresno, Calif.; American University of Beirut School of Medicine, Syria, 1908; died in St. Agnes Hospital February 3, aged 60, of complications due to a duodenal ulcer.

Jacob Earl Meengs * Grand Rapids, Mich.; Rush Medical College, Chicago, 1904; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; died February 2, aged 62, of valvular heart disease, arteriosclerosis and general edema with pleuritic effusion on the right side.

Charles A. Moore, Tampa, Fla.; Eclectic Medical Institute, Cincinnati, 1885; died in the Tampa Municipal Hospital February 6, aged 84, of cerebral hemorrhage.

Louis Grant Morrill, St. Clair, Mich.; Northwestern University Medical School, Chicago, 1913; member of the Michigan State Medical Society; formerly clinical assistant, instructor and associate in surgery at his alma mater; for many years on the staff of St. Luke's Hospital, Chicago, and had also been connected with the Commonwealth Edison Company in Chicago; died in the University Hospital, Ann Arbor, February 1, aged 65, of cerebral hemorrhage.

Solomon B. Myers, Mount Holly Springs, Pa.; Chicago Homeopathic Medical College, 1887; on the courtesy staff of the Carlisle Hospital, Carlisle, where he died February 1, aged 89, of myocardosis due to arteriosclerosis.

Henry Joseph Noerling * Valatie, N. Y.; Albany Medical College, 1911; mayor of the village of Valatie; president of the Columbia County Board of Health and the Valatie Savings and Loan Association; member of the board of trustees of the National Union Bank of Kinderhook; on the staffs of the Hudson City Hospital, Hudson, and the Albany Hospital, Albany; died February 4, aged 55, of hypertension and myocardial degeneration.

George Henry Palmerlee, Detroit; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; fellow of the American College of Surgeons; veteran of the Spanish-American War; served as a major in the National Guard; formerly medical inspector of the city board of health; on the staff of the Grace Hospital, where he died January 22, aged 71, of coronary thrombosis.

Don V. Poindexter, East St. Louis, Ill.; Marion-Sims College of Medicine, St. Louis, 1898; served one term as coroner of Bond County; died in St. Mary's Hospital, January 9, aged 69, of myocarditis and bronchiectasis.

Walter S. Quaintance, Slate Mills, Va.; University College of Medicine, Richmond, 1904; also a dentist; died in the University of Virginia Hospital, University, February 3, aged 62, of coronary thrombosis.

James Thomas Rainer * Yazoo City, Miss.; Memphis (Tenn.) Hospital Medical College, 1912; member of the Mississippi State Medical Association; county physician; served overseas during World War I; on the staffs of King's Daughters Hospital and the Yazoo Clinic and Hospital; died February 3, aged 54, of cardiovascular renal disease.

Walter R. Schmidt, Glencoe, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1903; member of the Minnesota State Medical Association; served as coroner and health officer; clerk of school board at Chisholm; on the staff of Glencoe Municipal Hospital; died January 20, aged 65, of carcinoma with metastasis in the left axilla.

Samuel S. Shorer, Milwaukee; Bennett College of Eclectic Medicine and Surgery, Chicago, 1885; died January 5, aged 81, of influenza, acute bronchitis, arteriosclerosis and cardiorenal disease.

Edward Sylvester Smith, Bridgeport, Conn.; New York Homeopathic Medical College and Hospital, New York, 1888; served as president of the board of directors of the Y. M.

C. A.; died in the Dr. J. H. Evans' Private Hospital, New Haven, February 4, aged 86, of arteriosclerotic heart disease and chronic arthritis.

William Thomas Stewart, Oxford, Ohio; Medical College of Ohio, Cincinnati, 1908; member of the Ohio State Medical Association; served in France as a captain in the medical corps of the U. S. Army during World War I; past president of the Butler County Board of Health; on the staffs of the Fort Hamilton Hospital and the Mercy Hospital, Hamilton, where he died January 23, aged 65, of Paget's disease and uremia.

Charles Midwood Stiles, Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; member of the Medical Society of the State of Pennsylvania and the American Academy of Ophthalmology and Otolaryngology; served as a captain in the medical corps of the U. S. Army during World War I; for many years on the staff of the Frankford Hospital; died in the Veterans Administration Facility, Coatesville, January 27, aged 77, of bronchopneumonia.

James Milton Still, Dallas, Texas; Marion-Sims College of Medicine, St. Louis, 1892; past president of the Kaufman County Medical Society; at one time health officer of Kaufman County; died January 27, aged 74, of carcinoma of the buccal cavity.

Benjamin Early Stockwell * St. Louis; Barnes Medical College, St. Louis, 1904; died February 2, aged 80, of heart disease.

William Veazey, Van Alstyne, Texas; University of Louisville (Ky.) Medical Department, 1898; for many years a member of the local school board; died in San Antonio January 27, aged 69, of cerebral arteriosclerosis.

Levin West * Frederick, Md.; University of Maryland School of Medicine, Baltimore, 1886; served on the staffs of the Schnauffer Hospital, Brunswick, and the Frederick City Hospital; died January 30, aged 79, of cerebral embolism.

Clarence John Wichser, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the Louisiana State Medical Society; physician in chief, city sewerage and water board; died in the Mercy Hospital January 25, aged 52, of cardiac infarct.

DIED WHILE IN MILITARY SERVICE

Frank Bolles Wakeman * Colonel, M. C., U. S. Army, Washington, D. C.; Indiana University School of Medicine, Indianapolis, 1926; graduated in pharmacy, Valparaiso University in 1915, received degree in pharmaceutical chemistry, 1916, and the degree of bachelor of science, 1917; served in World War I from August 1917 to May 31, 1919, as a first lieutenant, infantry, Officers Reserve Corps; overseas with the 369th U. S. Infantry (old fifteenth New York Infantry); on active duty as a first lieutenant, medical reserve corps from Aug. 1, 1926 to Aug. 21, 1927, during which time he completed an internship at Walter Reed General Hospital; practiced medicine in Indiana from August 1927 to May 1928; appointed as a first lieutenant in the medical corps, regular army, on March 23, 1928; promoted to captain on June 3, 1928, major, June 4, 1937, temporary lieutenant colonel on Feb. 1, 1942 and temporary colonel on Sept. 8, 1942; graduate from basic course, Army Medical School, 1929, and advanced course, 1936; graduate from basic course, Medical Field Service School, Carlisle Barracks, 1929, and advanced course, 1938; served as an instructor in biochemistry at Army Medical School, 1932-1936, and instructor in sanitation at Medical Field Service School, 1937-1939; received the degree of master of arts in 1933 and the degree of doctor of philosophy in 1935 from Catholic University of America and the degree of doctor of public health in 1937 from Johns Hopkins University School of Public Health; graduated from the Command and General Staff School, Fort Leavenworth, Kan., in 1940; awarded the Henry Wellcome prize in 1938 by the Association of Military Surgeons of the United States for his essay on "A Specific Somatic Polysaccharide as the Essential Immunizing Antigen of the Typhoid Bacillus"; chief of the Training Division, Office of the Surgeon General, since February 1940; member of the Association of Military Surgeons of the United States and the Society of American Bacteriologists; fellow of the American College of Physicians; died in Fort Monmouth, N. J., March 17, aged 47, of coronary occlusion, while attending a conference of G-3 officers.

Correspondence

THE HISTORY OF PENICILLIN

To the Editor:—It is not too early to take considerable care in recounting the history of the development of penicillin. The remarkably rapid increase of professional as well as public interest in this potent but nontoxic bactericide dictates such caution. The full story of its rediscovery by Florey, Chain and their co-workers nine years after its original discovery by Fleming in 1929 has not yet been fully recorded. This is probably largely because Professor Florey has not wanted to detract from the honor due Prof. Alexander Fleming, its original discoverer, who is still living and still a brilliant observer. This is only just, but the lack of a full account of its rediscovery can lead to mistaken notions. Thus Herrell writes in *THE JOURNAL*, March 4, "Following the isolation of an antibacterial agent, gramicidin, from *Bacillus brevis* by Dubos in 1939, a reinvestigation of substances of biologic origin was naturally undertaken. Chain and other Oxford investigators in 1940 reported on penicillin and its possibilities as a chemotherapeutic agent." This statement appears to suggest that the rediscovery of penicillin at Oxford was stimulated by the development of gramicidin. This was not the case. Actually it was work on a less well known antibacterial agent, lysozyme, that had most to do with creating interest in penicillin at the Sir William Dunn Institute of Pathology.

Lysozyme, which also was discovered by Fleming, is a potent antibacterial enzyme found in most body tissues. It occurs in high concentration in human tears, in human saliva and particularly in egg-white. Egg-white lysozyme has been crystallized and found to be a carbohydrate-splitting enzyme. Before the development of gramicidin it was perhaps the best known of all the antibacterials of cellular origin. Florey had been interested in it for some time and had published on it as early as 1930.

In the fall of 1937 I came to Oxford as a Rhodes scholar to work in Florey's laboratory. He assigned me my doctorate thesis subject, "The Actions of Certain Bacteriolytic Principles," allowed me to choose Dr. Ernest Chain, a brilliant biochemist, as my supervisor, and bade me get to work to isolate the substrate of lysozyme. We did succeed in doing this, confirming and extending the findings of Karl Meyer and his co-workers. During the course of this work we began to share Florey's interest in other antibacterials of cellular origin, such as pyocyanin, actinomycin, streptothricin and bacteriophage. We read Fleming's original 1929 paper on penicillin, were most impressed with the possibilities of the subject and found it difficult to understand why the study of penicillin had practically lapsed for nine years. It appeared that this was probably due mainly to the difficulties in purification of the substance and not because the observations had not been confirmed.

We were very fortunate in being able to borrow a strain of the Fleming *Penicillium notatum* from another research investigator in the Sir William Dunn School of Pathology, Miss Campbell-Renton. She had kept the original Fleming strain going, hoping to work on penicillin sometime when her bacteriophage studies with Prof. A. D. Gardner did not claim all her time. With Florey's permission, Chain and I recultured this strain and tested the antibacterial properties of the medium on several cocci. The results were not impressive. Preliminary experiments rarely are. It was a particularly busy moment in the lysozyme research, so Professor Florey asked Dr. Norman Heatley to work with Chain on the further development of penicillin. This was in 1938, as I recall. Heatley and Chain, with the active advice of Professor Florey, succeeded in purifying and standardizing penicillin, and by the late spring of 1940 hard work had produced enough partially

purified penicillin for use in animal experiments. These experiments were well planned and were immediately and brilliantly successful. Classically dramatic results were obtained. The importance of the findings was understood at once, and practically the whole Sir William Dunn Institute of Pathology was turned over to penicillin research, the work being financed mainly by the British Medical Research Council. It is a tribute to the wisdom of British science and to the British people as a whole that all this was accomplished at exactly the period of the greatest peril to their country—when France capitulated and when it appeared possible that the Nazis would invade England itself. The development of the clinical use of penicillin grew rapidly, and Professor Florey's visit to the United States in the summer of 1941 stimulated interest in it here. Commercial production was undertaken, with what results is now well known. It has been wisely shepherded by the National Research Council and given only to qualified investigators.

As will be obvious from the preceding account, my contact with the development of penicillin was largely tangential, although I did have the opportunity to work with it again under Prof. Warfield T. Longcope and Dr. Murray Fisher during my internship at the Johns Hopkins Hospital. It has been possible for me to observe, however, various steps in its development. That is why I am impelled to enumerate a few facts about its development at Oxford.

LESLIE A. FALK, 1st Lieutenant, M. C., A. U. S.

TOXICITY OF SODIUM BENZOATE

To the Editor:—With the increasing use of the synthesis of hippuric acid as a test of liver function, the toxicity of sodium benzoate requires careful reevaluation. Recently Kinsey and Wright (*J. Lab. & Clin. Med.* 29:188 [Feb.] 1944) reported that, after a patient recovering from a serious attack of hepatitis had taken the usual dose of 6 Gm. of sodium benzoate as used in the test, a strong reaction ensued: severe substernal pain, shock, increased icterus and later granulocytopenia and eosinophilia. To my knowledge this is the first severe reaction from sodium benzoate reported in the literature, although I have been informed of several cases in which untoward reactions to this drug were shown.

Sodium benzoate, generally speaking, is one of the most innocuous drugs known. Some of the older clinicians, Senator, for instance, gave doses of 12 Gm. daily to their rheumatic patients. Several investigators reported taking 40 Gm. or more of sodium benzoate in twenty-four hours with no pronounced toxic effect. I, as well as many others, have performed the hippuric acid test on patients with severe acute hepatitis without any demonstrable reaction.

In view of these observations, it seems clear that sodium benzoate has little or no direct toxic action other than occasionally causing nausea. When, therefore, a severe reaction occurs, a hypersensitivity has in all probability developed. Since benzoic acid lacks reactive groups in the ring, it is unlikely that it per se acts as a hapten. Since only about 80 per cent of the ingested benzoic acid is recovered as hippuric acid, it seems fairly certain that some of the compound is metabolized, and it is probable that a metabolic product, perhaps a hydroxybenzoic acid or a phenol, may be the factor to which the organism has become hypersensitive. This appears all the more likely in view of the fact that the patient of Kinsey and Wright had his toxic reaction not immediately but four hours after the sodium benzoate had been given. Since considerable benzoic acid is taken into the body almost daily in the food either as such or as quinic acid, which is converted to benzoic acid, sensitivity to benzoic acid must be exceedingly rare. It therefore seems justifiable to state that the danger of a serious reaction from sodium benzoate is so remote that one need not hesitate to do the oral hippuric

acid test whenever the information that this test supplies is deemed desirable.

The intravenous modification has been used extensively in various clinics and hospitals for the past few years. The incidence of untoward reactions is somewhat higher, but except for a few isolated instances the reactions have been transient. It is likely that many of these reactions are on a psychic basis brought on by the fact that the injection requires about five minutes, and that a cramplike pain may be produced if the solution is administered too fast. It should be emphasized that only a properly prepared solution of sodium benzoate be injected. Unless one has all the facilities to make solutions safe for intravenous administration, it is advisable to use commercial ampules prepared for the test.

While toxic reactions from sodium benzoate are rare, it is nevertheless important to know that they can occur, since forewarned is forearmed. The desirability of reporting toxic effects from sodium benzoate as well as from other drugs cannot be overstressed, since this is the only means whereby the relative safety of any drug can be accurately evaluated.

ARMAND J. QUICK, M.D., Milwaukee.

LATE MUSCLE ATROPHY IN POLIOMYELITIS

To the Editor:—In the issue of March 4, page 676, the answer to a query on the relationship of poliomyelitis to late muscle atrophy denies any possible correlation between the two conditions and states that the latter condition would be due "to some new injury to or disease of the muscle or its corresponding nerve." However, a number of cases of chronic anterior horn cell atrophy of a noninflammatory nature (progressive muscular atrophy, progressive nuclear atrophy) have been described, which have followed after a variable interval an attack of poliomyelitis. This degenerative condition has usually been reported in persons who have exercised their muscles strenuously; in a mountain climber, for example, and I saw it appear in a ditch digger two years after a typical attack of poliomyelitis. Thus it does seem that in some individuals the original inflammatory lesion of poliomyelitis leaves a locus of least resistance, which later succumbs to a degenerative process, of which the results seem identical with those ordinarily described in progressive muscular atrophy. Pronounced muscular activity seems to play some role in the initiation of this atrophy.

LEO A. SPIEGEL, M.D., New York.

"IMMEDIATE CARE OF THE NEWBORN"

To the Editor:—This communication is in reference to the article on "Immediate Care of the Newborn in Relation to Neonatal Mortality," by Ralph M. Tyson, M.D., which appeared in THE JOURNAL, February 5.

In the section on skin infections he recommends that a 5 per cent lotion of sulfathiazole be applied freely. "Exposure to ultraviolet radiation at a close distance is helpful." Many dermatologists are seeing eruptions following the external use of sulfonamides in various vehicles. Many of us believe that their use is being overdone. This applies particularly to impetigo, in which ammoniated mercury is still preferred.

The sulfonamides are apt to produce sensitization just as much as and more so than ammoniated mercury. The sulfonamide compounds also sensitize the skin to the sun and I strongly advise against the concurrent use of ultraviolet rays that the author suggests—not only in impetigo but also in the treatment of any other disease. An article of mine in preparation cites the deleterious effects of ultraviolet rays applied to the skin after the topical application of sulfonamide ointment.

E. WILLIAM ABRAMOWITZ, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, April 15, page 1153.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part I-II*. Various centers, May 1-3. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various large cities, May 8. *Oral*. Chicago, June 17. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral*. Chicago, June 8-10. Final date for filing application is May 20. *Written*. Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. Chicago, June 5. Sec., Dr. Paul C. Bucy, 912 S. Wood St., Chicago.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY. *Oral. Part II*. Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 2-5. Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I*. Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral*. New York City, June 1-4. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written*. Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Written*. Locally, Sept. 22. *Oral*. St. Louis, Nov. 8-9. Final date for filing application is Aug. 15. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Reasonableness of Fee for Mastoidectomy.—The physician plaintiff, an otologist, on June 19, 1937 performed a mastoidectomy on the patient for an infection involving the petrous portion. Beginning about six months later the physician made more than sixty visits to the patient, for what purpose the reported case is not clear but "not in connection with postoperative treatment." When the operation was performed the patient was a minor and arrangements for it were made by his uncle, who was told by the physician that the charge for the operation would be very moderate. In March 1938 the patient was emancipated by court judgment and subsequently inherited approximately \$40,000 from the estate of his father. Apparently unaware of the inheritance, the physician billed the patient for \$400 for the operation and \$115 for subsequent visits. Between April 1939 and January 1940 the patient paid the physician a total of \$80 on account and sent him letters in which he expressed appreciation for the consideration shown him, admitted the bill was fair, and stated his intention to pay as soon as he could. Subsequently the physician sued the patient for the unpaid balance. The patient defended by claiming that the amount charged for the operation was excessive and that the sixty or more professional visits for which charges had been made "were made necessary because of postoperative treatment" for which no additional charges should have been made. From a judgment, in the main, for the physician the patient appealed to the court of appeal of Louisiana, Orleans Parish.

The appellate court held that the amount charged for the operation was not excessive in view of the testimony of two "recognized otologists," called as witnesses by the physician at the trial, to the effect that the performance of a mastoidectomy "for a petrous infection" was most serious and that a charge of \$400 for such an operation would be the minimum which should be charged. Even though the physician, said the court, may have told the patient's uncle that the charge would be very moderate, surely the physician did not intend to give the impression that he would make no charge at all but merely that he would make the minimum charge usual for such an operation. In determining what is a correct charge for professional services, there should be considered two things: first, the training and experience necessary and the seriousness of the treatment or operation; and, second, the ability of the defendant to pay. We do not mean that because a defendant may be a very rich man he may be required to pay an exorbitant charge, but we do mean that, where a defendant is shown to be well able to pay, the physician should not be required to reduce his charge and in fixing it may take into consideration the fact that the patient has ample funds out of which to make the payment.

At the trial, to prove the reasonableness of the charge made for the operation, the physician called the two otologists referred to, who heard all of the evidence at the trial. At the close of the evidence, counsel for the plaintiff asked for a rule on the defendant to tax the witness fees of these two otologists as costs of court and asked that those fees be fixed at \$50 each. Counsel for the defendant contended that these charges should not be taxed as costs of court first, because the testimony was not expert evidence and, secondly, because in support of the rule to tax their fees the two experts themselves did not take the witness stand but merely submitted bills to the court. The patient contended that the testimony of the otologists was not expert testimony because no special study or experience in any branch of science was necessary to give the testimony they gave. The patient called attention to a Louisiana statute which provides that witness fees, in addition to the fees allowable to an ordinary witness, may be allowed by the court with respect to a witness called to testify only to an opinion founded on special study or experience in any branch of science (Dart's Revised Statutes, vol. 1, sec. 1990). The patient argued that any layman who had employed a physician may testify as to what the charge made against him was and from such experience might testify as to what such charges should be. We cannot agree with this contention, said the appellate court. It is true that any layman who has required the services of a physician may know what charge was made against him and it is true that any layman who has required such services often may have acquired experience which will enable him to judge, with fair accuracy, just what charge will be made for any given services. However, only one who has himself had experience in rendering the same kind of service or in performing the same kind of operation or who has had experience in making charges therefor may be said to be capable of giving expert testimony on the subject. Where the bill of a physician is questioned, the best evidence as to its correctness must be given by another physician who has himself studied the same branch of science and knows how serious may have been the condition of the patient, or how dangerous may have been the operation. The court accordingly concluded that the two otologists gave expert testimony and that therefor their fees as experts should be taxed as costs of court if properly proved. The court, however, held that their fees were not properly proved since they did not take the witness stand and thus submit themselves to cross examination but only submitted bills to the court. The court held that the witness fees of the otologists could not be allowed at this time.

The judgment in favor of the physician for the unpaid balance of his charges for the operation and the subsequent visits was affirmed.—*Womack v. Burke*, 14 So. (2d) 302 (La., 1943).

Society Proceedings

COMING MEETINGS

- American Medical Association, Chicago, June 12-16 Dr. Olin West, 535 N. Dearborn St., Chicago 10, Secretary
- American Association for the Surgery of Trauma, Chicago, June 9-10 Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.
- American Association for Thoracic Surgery, Chicago, May 5-6 Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
- American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 8-10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.
- American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Tigi, 102 Second Ave., S.W., Rochester, Minn., Secretary.
- American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
- American ation, New York, June 6 Dr. Paul H. Ave., Chicago, Secretary.
- American June 14. Mr. Mac F. Cahrl, tary.
- American June 11. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.
- American Gastro-Enterological Association, Chicago, June 12-13. Dr. J. Arnold Bagen, 102 Second Ave. S.W., Rochester, Minn., Secretary.
- American Laryngological Association, New York, June 7-8. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.
- American Laryngological, Rhinological and Otolological Society, New York, June 9-10 Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.
- American Medical Women's Association, Chicago, June 10-11. Dr. Carroll I. Birch, 2045 Sedgwick St., Chicago, Secretary.
- American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.
- American Ophthalmological Society, Hot Springs, Va., May 29-31. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.
- American Proctologic Society, Chicago, June 11-15. Dr. W. H. Daniel, 1930 Wilshire Blvd., Los Angeles 5, Secretary.
- American Psychiatric Association, Philadelphia, May 15-18 Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
- American Psychoanalytic Association, Philadelphia, May 13-15 Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.
- American Society for Clinical Investigation, Atlantic City, May 8 Dr. Wesley W. Spink, University Hospital, Minneapolis, Secretary.
- American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St. N.W., Washington 6, D. C., Secretary.
- Association for Research in Ophthalmology, Chicago, June 13. Dr. B. G. Payne, School of Aviation Medicine, Randolph Field, Texas, Secretary.
- Association for the Study of Internal Secretions, Chicago, June 12-13. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, Secretary.
- Association of American Physicians, Atlantic City, May 9 Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
- California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
- Connecticut State Medical Society, Bridgeport, May 24. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Georgia Medical Association of Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Hawaii Territorial Medical Association, Honolulu, May 5-6 Dr. A. V. Mo'neux, 1133 Punchbowl St., Honolulu, Secretary.
- Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
- Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
- Louisiana State Medical Society New Orleans, April 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.
- Mississippi State Medical Association, Jackson, May 9-10 Dr. T. M. Dye Box 995 Clarksdale, Secretary.
- Missouri State Medical Association Kansas City, April 23-25 Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis Secretary.
- National Tuberculosis Association, Chicago, May 10-12 Dr. Charles J. Hatfield 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 16 Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, April 25-27. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
- North Carolina, Medical Society of the State of, Pinehurst, May 1-3. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Fargo, May 7-9. Dr. L. W. Larson 221 5th Street, Bismarck, Secretary.
- Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 24-26. Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
- Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.
- Society for Investigative Dermatology, Chicago, June 13. Dr. S. W. Becker, 55 E. Washington St., Chicago, Secretary.
- Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
- South Dakota State Medical Association, Huron, May 21-23 Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.
- Texas State Medical Association of, Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
- West Virginia Medical Association, Wheeling, May 15-16 Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Current Medical Literature**AMERICAN**

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopsychiatry, New York
14:1-190 (Jan.) 1944. Partial Index

- Rorschach Test with Young Children. Anna Hartoch Schachtel.—p. 1.
 Personality Development of Boy From Age 2 to 7. Lois Barclay Murphy.—p. 10.
 Rorschach Method as Therapeutic Agent. G. R. Kamman.—p. 21.
 Reactions of Children with Fathers and Brothers in Armed Forces. G. E. Gardner and H. Spencer.—p. 36.
 Collective Psychotherapy of Mothers of Emotionally Disturbed Children. Fanny Amster.—p. 44.
 Types of Personality Structure Encountered in Child Guidance Clinics. R. L. Jenkins and L. Hewitt.—p. 84.
 Defective Delinquent: Definition and Prognosis. L. A. Lurie, S. Levy and Florence M. Rosenthal.—p. 95.
 Mongolism Among School Children. J. E. W. Wallin.—p. 104.
 "Opportunity" Class: Study of Children with Problems. J. W. Beckmann.—p. 113.
 Psychiatric Problems in Training School for Delinquent Girls. Margaret C. L. Gildea.—p. 128.
 Mental Hygiene Value of Children's Art Work. Maria Brick.—p. 136.
 Danger and Morale. E. Kris.—p. 147.
 Correlation Between Wechsler Mental Ability Scale, Form B, and Kent Emergency Test (E-G-Y) Administered to Army Personnel. E. D. Greenwood, H. L. Snider and M. M. Senti.—p. 171.

American Journal of Public Health, New York
34:1-100 (Jan.) 1944

- Public Health Implications of Tropical and Imported Diseases: Strategy Against the Global Spread of Disease. T. Parran.—p. 1.
 *Id.: Yellow Fever and Typhus and Possibility of Their Introduction into United States. W. A. Sawyer.—p. 7.
 *Id.: Imported Malaria. O. R. McCoy.—p. 15.
 Id.: Public Health Aspects of Certain Other Diseases to Which Our Military Forces May Be Exposed. H. E. Meloney.—p. 20.
 *Immunizations in United States Army. A. P. Long.—p. 27.
 Experience with Administrations of Medical Care Program for Wives and Infants of Enlisted Men. Martha M. Eliot.—p. 34.
 Epidemiologic Notes on Meningococcal Meningitis in Army. P. E. Sartwell and W. M. Smith.—p. 40.
 Objectives in Programming of Postwar Sanitation Works. E. Boyce.—p. 50.
 The Battle for Health: Radio Script. I. Tunick.—p. 54.

Yellow Fever and Typhus: Possibility of Their Introduction into the United States.—Sawyer shows that the most serious risk of introducing yellow fever is through air travel. Travelers visiting infected regions have been encouraged to get themselves vaccinated. Passengers arriving from endemic areas are inspected by quarantine officers. Persons showing elevation of temperature or other evidence of illness are detained until a diagnosis is made. Those who are well and are nonimmune but who have possibly been exposed within a few days are kept under surveillance for the remainder of the incubation period of six days unless the destination is north of any region in which *Aedes aegypti* might breed. The control of *Aedes aegypti* remains the method of choice for cities and other places in the tropics and subtropics where this mosquito has become established. *Aedes aegypti* is especially vulnerable, as it is highly domestic and accessible and not so widely distributed as is commonly supposed. This makes it possible for health departments to organize a systematic attack on the mosquito in its larval stages and so hasten this dangerous insect on the way to local extermination. Most effective methods have been worked out in Brazil and applied with such success that in most cities and in many large areas *Aedes aegypti* can no longer be found. Introduction of louse borne typhus by returning troops would seem improbable. There are, however, other ways in which louse borne typhus can enter this country in time of war and spread as far as the local louse infestation will permit. The point is illustrated by the occurrence observed in the Southwest in 1916. The present situation in the United States with respect to the risks of typhus introduction is quite different from the one in 1916.

All that protected us from a widespread epidemic of typhus during the last war was the general freedom of the public from body lice. As a rule the disease showed no tendency to spread beyond the immediate contacts of the persons introducing it into the communities. There is no reason to believe that lousiness is any more prevalent now than then or that war conditions will bring about a great increase in these insects.

Tropical and Imported Malaria.—McCoy emphasizes that large numbers of troops returned from overseas are infected with malaria. Although there is a hazard of the establishment of new foci of malaria infections of the country now free of the disease, the chances of serious consequences from such introduction are not considered very great. Prompt antimosquito measures should bring about rapid control of possible outbreaks. Intensification of anopheline mosquito control is indicated in the present endemic areas in this country to lessen the hazard from the introduction of new strains of malarial parasites. The most important problem connected with the return of military personnel infected with malaria is to insure proper diagnosis and treatment of the relapses which may occur after the service men have returned to their home communities.

Immunizations in the United States Army.—Long discusses the prevention of disease by immunization procedures. These immunizations have been divided into two classifications: the so-called routine immunizations and the special immunizations. The routine immunizations are those administered to all military personnel as soon as possible after entrance into the federal service. These are vaccinations against smallpox, typhoid and the paratyphoid fevers and active immunization against tetanus. Procedures referred to as special immunizations include vaccination against yellow fever, typhus and cholera. Vaccination against plague is another procedure for which provisions have been made. As in typhus and cholera, sanitary measures are stressed for the prevention of plague, and it is believed that in the majority of instances these measures will prove to be adequate protection. Plague vaccine is not now routinely administered to troops but is supplied to forces in areas where danger from the disease may be confronted. Immunization against such diseases as diphtheria and scarlet fever is not routinely practiced, but materials are made available for use if the situation should require artificial protection against these diseases.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.
51:1-124 (Jan.) 1944

- Roentgenologic Types of Pulmonary Lesions in Primary Coccidioidomycosis. J. R. Colburn.—p. 1.
 Acute Phosgene Poisoning: Roentgen Findings in Lungs: Case Report. H. H. Sage.—p. 9.
 Cholecystography and Jaundice. F. Huber.—p. 12.
 Laminographic Studies of Aorta: Their Advantages and Limitations. W. G. Scott and D. S. Bottom.—p. 18.
 Practical Cardiokymography: Its Significance in Evaluating Cardiac Function. L. J. Friedman and P. S. Friedman.—p. 29.
 Angiocardiographic Analysis of Cardiac Configuration in Rheumatic Mitral Disease. A. Grishman, M. L. Sussman and M. F. Steinberg.—p. 33.
 *Nontuberculous Pulmonary Cavitation. L. Nathanson and P. Morgenstern.—p. 44.
 *Emphysematous Cholecystitis. C. A. Stevenson.—p. 53.
 Roentgen Therapy for Bronchiogenic Cancer. B. P. Widmann.—p. 61.
 Roentgen Study of Lymphogranuloma Venereum: Report of 24 Cases. I. Klein.—p. 70.
 Data on Attenuation of Narrow and Broad Beams of 1,000 Kilovolt (Peak) Roentgen Rays by Lead, Concrete and Water. T. R. Folsom and Elizabeth F. Focht.—p. 76.
 Three and One-Half Years' Experience with the 1,000 Kilovolt Roentgen Therapy Unit at Memorial Hospital. A. F. Hocker and Ruth J. Gutman.—p. 83.

Nontuberculous Pulmonary Cavitation.—Nathanson and Morgenstern illustrate roentgenographically lesions of the lung which presented cavitation or what simulated cavitation, particularly of the upper lobes, and which on biopsy or necropsy proved to be nontuberculous. The majority of these patients were referred to Sea View Hospital from other metropolitan hospitals with the diagnosis of tuberculosis made clinically, roentgenographically and in 1 instance apparently by a positive sputum examination. The authors present 8 cases with anthracosis, cystic disease of the lung, actinomycosis, aortic aneurysm producing pulmonary necrosis, bronchogenic neoplasm with parenchymal necrosis, a lung abscess of the upper lobe, cavitation probably as a result of Friedländer's bacillus infection

of the lung, and a case of bronchiectatic cavitation of the upper lobe. Other lesions will produce cavitation in the lung, and Winn has recently reported 12 cases of pulmonary cavitation associated with coccidioid infection. Slowly resolving non-specific pneumonias may present areas of clearing that simulate cavitation, and one may find cysts or bleb formation in association with pneumonias in children which will suggest a tuberculous lesion. Occasionally a gumma may cavitate centrally and simulate tuberculosis. The authors stress that roentgenographic demonstration of cavitation is not conclusive for the diagnosis of pulmonary lesions and that the possibility of other pulmonary lesions must be kept in mind.

Emphysematous Cholecystitis.—Stevenson defines emphysematous cholecystitis as an acute infection of the gallbladder characterized by gas production in the gallbladder lumen, walls and pericholecystic tissues. Any virulent gas-producing organism may be responsible. Hegner in 1931 reported what apparently was the first case in which it was possible to make a preoperative diagnosis of this condition by means of roentgenography. Stevenson's 3 patients had roentgenologic aspects similar to Hegner's patient. All 3 were men, aged 64, 63 and 52 respectively. All 3 patients showed gas in the gallbladder, blebs in the wall and collections of gas in the pericholecystic tissues. No gas was noted within the biliary duct system. In 2 of the patients the condition was correctly diagnosed preoperatively. Medical treatment consisting of sulfathiazole, Clostridium welchii antiserum and roentgen radiation was successful in the treatment of 1 case. The author concludes that roentgenograms of the gallbladder region are of distinct value in cases of acute cholecystitis. The roentgenographic demonstration of gas in the gallbladder lumen, emphysematous blebs in the gallbladder wall and collections of gas in the pericholecystic tissues is indicative of acute gangrenous cholecystitis, most likely caused by *Cl. welchii*.

American Review of Tuberculosis, New York

49:115-202 (Feb.) 1944

- *Silicotuberculosis. O. Auerbach and Marguerite G. Stemmerman.—p. 115.
Quantity of Focal (Tubercle) Calcium in Human Lungs. P. E. Steiner, D. W. Stanger, Miriam Bolyard and A. W. Marcovitch.—p. 129.
Tuberculosis Stenosis of Major Bronchi: Its Diagnosis by Rhonchi, Verified by Bronchoscopy. M. McConkey and J. Gordon.—p. 140.
Sarcoidosis: One Case Report and Literature Review of Autopsied Cases. E. H. Rubin and M. Pinner.—p. 146.
Tuberculosis in Employed Women: Morbidity and Mortality Trends in Relation to Age. Martha V. Doran.—p. 170.
Effect of Yeast on Toxic Reactions of Protein on Tuberculous Guinea Pigs. G. M. Higgins and W. H. Feldman.—p. 179.

Silicotuberculosis.—To determine whether pneumoconiosis alters or is itself altered by pulmonary tuberculosis, Auerbach and Stemmerman reviewed 54 cases of silicotuberculosis and compared them with 9 cases of pneumoconiosis without tuberculosis and 200 cases of tuberculosis without pneumoconiosis. They found that, although silicosis and tuberculosis exist concomitantly in the same lung, each maintains its individual integrity. Tuberculosis apparently does not alter the silicosis present. Pneumoconiosis alters tuberculosis only to the extent that the silicotic nodules prevent the full development of tuberculous granulation tissue and, in the walls of cavities, the pyogenic membrane. Both granulation tissue and pyogenic membrane, however, are present in those portions of the lung where the silicotic foci are small or absent. Except for this quantitative difference they found little variation in the tuberculous process, whether or not pneumoconiosis is present. The size, situation and number of cavities are approximately the same. There is a slightly greater incidence of perforation of cavities through the interlobar fissures in the silicotic and a greater incidence of death from fatal pulmonary hemorrhage. The latter factor is due to the greater productive reaction in the silicotic lung with greater opportunity to develop an aneurysm of a branch of the pulmonary artery. The authors found it difficult to determine the exact time at which pulmonary tuberculosis was superimposed on pneumoconiosis unless the patient was under observation during the transition period, since the symptoms of the two diseases are similar. While fever and definite evidence of cavitation on roentgenography are useful diagnostic aids, the final conclusion must

be based on the demonstration of the tubercle bacillus. Collapse therapy was of little value in cases of silicotuberculosis. This is apparently due to the fact that the silicotic lung remains voluminous and shows no tendency to collapse. Most patients succumbed to progressive pulmonary insufficiency. When the tuberculous process invaded the remaining portions of resilient lung tissue sufficiently, death was inevitable.

Archives of Internal Medicine, Chicago

73:1-112 (Jan.) 1944

- Effect of Cinchophen on Secretion of Cholic Acid. J. H. Annegers, F. E. Snapp, A. C. Ivy and A. J. Atkinson.—p. 1.
Morgagni-Stewart-Morel Syndrome: Report of Case with Pneumoencephalographic Findings. M. T. Moore.—p. 7.
Effectiveness of Various Sulfonamide Drugs and Neoarsphenamine Against Pneumococci in Bone Marrow Cultures: Comparative Study. E. E. Osgood and J. G. M. Bullowa, with the technical assistance of I. E. Brownlee.—p. 13.
Capillary Fragility in Relation to Diabetes Mellitus, Hypertension and Age. S. B. Beaser, A. Rudy and A. M. Seligman.—p. 18.
Vitamin Therapy in Increased Capillary Fragility of Diabetes Mellitus. A. Rudy, S. B. Beaser and A. M. Seligman.—p. 23.
*Influence of Respiration on Blood Pressure in Man: with Note on Vasomotor Waves. A. Battro, R. González Segura, C. A. Elíçabe and E. Araya.—p. 29.
Rate of Sedimentation of Erythrocytes in Sick Cell Anemia. T. Winsor and G. E. Burch.—p. 41.
Gastroenterology: Review of Literature from July 1942 to July 1943. C. M. Jones.—p. 53.

Influence of Respiration on Blood Pressure.—Battro and his associates studied the registration of the intra-arterial pressure of human subjects. They ascertained that under normal conditions two principal types of waves exist: (1) vasomotor waves, which are independent of the respiratory movements and should be called by the names of their discoverers, Traube and Hering, and (2) blood pressure waves depending on the respiratory movements (respiratory waves). The authors discuss the different factors which influence the production of these waves. The intra-arterial pressure has no uniform or fixed behavior during the respiratory movements but may rise or fall in accordance with the type of breathing—thoracic or abdominal—or with the frequency or depth of respiration. Even during ordinary breathing, slight changes are noticeable, the most constant being a fall of blood pressure during inspiration and an elevation during expiration. With deep, slow thoracic breathing there usually occur an inspiratory fall and an expiratory rise of the blood pressure. The opposite, as a rule, is true of abdominal breathing of the same type. Curves of intra-arterial pressure registered during inspiratory apnea and the Valsalva test show a definite fall of blood pressure at the beginning, while those taken during expiratory apnea are characterized by a slight initial fall and a terminal rise. Coughing causes great increase in the blood pressure.

Archives of Neurology and Psychiatry, Chicago

51:113-212 (Feb.) 1944

- Studies in Reflexes: History, Physiology, Synthesis and Nomenclature. Study I. R. Wartenberg.—p. 113.
Simple Method of Determining Frequency Spectrums in Electroencephalogram: Observations on Effects of Physiologic Variations in Dextrose, Oxygen, Posture and Acid-Base Balance on Normal Electroencephalogram. G. L. Engel, J. Romano, E. B. Ferris Jr., J. P. Webb and C. D. Stevens.—p. 134.
Electrodiagnosis by Means of Progressive Currents of Long Duration: Studies on Cats with Experimentally Produced Section of Sciatic Nerves. L. J. Pollock, J. G. Golseth, A. J. Arief, I. C. Sherman, M. A. Schiller and E. L. Tigay.—p. 147.
Biopsies of Brain of Schizophrenic Patients and Experimental Animals. W. R. Kirschbaum and G. Heilbrunn.—p. 155.
Relation of Narcolepsy to Epilepsies: Clinical-Electroencephalographic Study. R. Cohn and B. A. Cruvant.—p. 163.
*Acetylcholine Treatment of Schizophrenia. L. H. Cohen, T. Thale and M. J. Tissenbaum.—p. 171.
Effect of Serum on Survival Time of Brain Tissue and Revival of Cerebral Oxidation. J. Wortis.—p. 176.
Injury to Peroneal Nerve Due to Crossing the Legs. II. S. Dunning.—p. 179.
Progressive Multiform Angiosis: Association of Cerebral Angioma, Aneurysms and Other Vascular Changes in Brain. S. Arieti and E. W. Gray.—p. 182.

Acetylcholine in Schizophrenia.—Cohen and his collaborators review the use of acetylcholine in the treatment of mental disease. Their studies were carried out on 11 patients. They describe a typical seizure that developed in 27 instances following the intravenous injection of 400 mg. of acetylcholine. A table lists age, duration of illness, number of treatments and

outcome in the 11 patients. The number of treatments varied between three and twenty-four. There was slight improvement in 1 woman, moderate improvement in another woman and remission in 1 man aged 36. The history of this last patient is described in detail. A total of twenty-four electric shock treatments had been ineffective. About five weeks after cessation of the electric treatments acetylcholine therapy was begun. Four treatments were given in all. The successive doses were 150, 300, 450 and 600 mg. The usual minor responses were noted during the first two treatments. He was pulseless for twenty seconds during the third treatment, with some twitching. During the fourth treatment he was several times pulseless for periods of from twenty to fifty seconds. After this therapeutic episode the dramatic remission took place. In 8 of 11 schizophrenic patients treated with convulsant doses of acetylcholine no general therapeutic benefit was obtained. The authors conclude that the therapeutic results do not justify the continued use of acetylcholine in this manner, particularly since the margin of safety of the drug appears to be extremely slight.

Archives of Surgery, Chicago

48:1-104 (Jan.) 1944

- *Application of Dicoumarin (3,3'-Methylene-Bis-[4-Hydroxycoumarin]) in Trauma and Gangrene. C. E. Brambel and F. F. Loker.—p. 1.
- Toxicopathologic Studies on Dye T-1824. W. C. Hueper and C. T. Ichniowski.—p. 17.
- Goiter Heart: Experimental Study. C. A. Hellwig.—p. 27.
- Hypoproteinemia: Clinical Relationship of Proteins and Protein Metabolism to Therapy with Special Reference to Surgery. A. O. Wilensky.—p. 36.
- Reconstructive Plastic Surgery of Absent Ear with Necrocartilage: Original Method. E. S. Lamont.—p. 53.
- Review of Urologic Surgery. A. J. Scholl and others.—p. 73.
- Progress in Orthopedic Surgery for 1942: Review Prepared by Editorial Board of American Academy of Orthopedic Surgeons: XIV. Conditions of Foot and Ankle.—p. 89.

Dicoumarol in Trauma and Gangrene.—Brambel and Loker used dicoumarol and heparin in several cases. They treated (1) post-traumatic conditions with associated gangrene following crush injury, (2) diabetic and arteriosclerotic gangrene and (3) frostbite. Eleven cases are presented and analyzed. Without exception, all cases exhibited increased prothrombin activity, detectable in dilute plasma. This suggests an indication for the administration of hemorrhagic compounds to alter biochemical conditions favoring thrombus formation. The use of dicoumarol in the treatment of granulating and ulcerative lesions is not contraindicated if caution and adequate control are exercised. Emphasis is placed on the value of frequent determinations of the prothrombin clotting time as an index to dosage. No set dosage for dicoumarol was found in the cases presented. Some required much larger doses than others. No contraindications were found when sulfonamide compounds and the hemorrhagic agent (dicoumarol) were used concomitantly if average normal renal and hepatic functions were present. One patient was treated by amputation below the knee, since it was feared that he could not withstand the shock of midhigh amputation. This instance suggests that the midhigh amputation in a patient with arteriosclerotic and diabetic gangrene of the toes may be supplanted by amputation at a site of election below the knee if dicoumarol is administered. This thesis was supported in another patient, whose leg was amputated below the knee for diabetic gangrene of the toes.

California and Western Medicine, San Francisco

60:1-44 (Jan.) 1944

- *Arthritis and Allied Conditions in an Army General Hospital. E. W. Boland.—p. 7.
- Abdominal Trauma. R. B. McCarty.—p. 9.
- Diabetes Mellitus: Some of Newer Factors in Its Etiology and Treatment. W. D. Sansum.—p. 13.
- Poliomyelitis: Its Present Status. N. B. Nelson.—p. 18.
- Obstructive Submucous Lipoma of Cecum. E. C. Moore.—p. 21.

Arthritis in an Army General Hospital.—Boland studied 350 cases of arthritis and allied conditions in the admissions to the medical service of an Army General Hospital. The cases were divided into those with peripheral joint complaints and those with symptoms referable to the back. The present discussion is limited to the first group, which comprised 61 per cent of the series. Approximately 19 per cent of the peripheral arthritides were of the rheumatoid type. Early joint effusion,

particularly in the knees, has been common. In 70 per cent of cases the joint involvement has been confined to the lower extremities alone. The metatarsophalangeal and interphalangeal joints of the toes were involved in 41 per cent of cases, while the corresponding joints in the fingers were affected in only 10 per cent. Such a distribution in rheumatoid arthritis is in sharp contrast to that encountered in the general population. Bacteriologic identification of the gonococcus and good clinical judgment are necessary before a diagnosis of gonorrheal arthritis can be made in the Army. If initial smears have failed to demonstrate the gonococcus, the diagnosis of gonorrheal arthritis has not been made. Osteoarthritis, gout and some of the rarer forms of arthritis have differed in no way from those seen in civilian practice. Psychogenic manifestations occur with appalling frequency in soldiers. Emotional upsets may bring about or intensify symptoms of pain, stiffness and limitation of motion in the joints and muscles. Twenty and six-tenths per cent of the cases with peripheral joint complaints were regarded as instances of psychogenic rheumatism, and 3.7 per cent of those with pathologic joint changes had a definite psychoneurotic coloring. Nineteen and one-tenth per cent of the group with backache were considered psychogenic and 26.5 per cent of those with roentgenographic or objective physical abnormalities of the back had a definite psychogenic overlay. In the vast majority of cases various psychoneurotic symptoms, such as anxiety, irritability, fatigue, insomnia and mental depressions, were present.

Canadian Medical Association Journal, Montreal

50:103-198 (Feb.) 1944

- Preventive Medicine in Rural Canada. A. F. Menzies.—p. 103.
- Prosthetic Face Reconstruction. J. Gerrie.—p. 104.
- Immobilization and Infrequent Dressings in Treatment of Wounds and Infections. G. A. Fleet and F. D. Ackman.—p. 109.
- Sulfonamide Treatment of Wounds. W. Magner and M. O. O'Sullivan.—p. 118.
- Aspects of Diseases in the Tropics. D. C. Bews.—p. 124.
- Whooping Cough: Skin Tests. N. Silverthorne, D. T. Fraser and A. Brown.—p. 129.
- Agglutinin Titers of Pooled Sera. D. G. Gerneroy.—p. 131.
- Further Report on Canadian Red Cross Food Parcels for British Prisoners of War. F. F. Tisdall.—p. 135.
- Observations on Commercial Bread as Source of B Vitamins. A. T. Owens and E. W. McHenry.—p. 138.
- Acute Membranous Stomatitis and Conjunctivitis (Report of 3 Cases). J. A. Langille.—p. 141.
- Use of Curare in Anesthesia and for Other Clinical Purposes. H. R. Griffith.—p. 144.
- Anorectal Suppurative Disease and Anorectal Fistula. E. A. Daniels.—p. 147.
- Training of Medical Officer. B. D. Robertson.—p. 154.

Gastroenterology, Baltimore

2:1-84 (Jan.) 1944

- *Addisonian Pernicious Anemia Without Achlorhydria: Does It Exist? J. M. Askey.—p. 1.
- Disease in Tropical War Zones: III. Diseases of Mediterranean Basin and of Tropical Africa. E. C. Faust.—p. 13.
- Effect of Motion on Roentgenographic Appearance of Stomach and Small Bowel. F. E. McDonough and M. Schneider.—p. 32.
- Pharmacologic and Clinical Study of Spasmolytic Drugs. H. Necheles, W. H. Olson, F. Neuwelt and E. Spier.—p. 46.
- Life Cycle of Carcinoma of Stomach: Report of 3 Interesting Cases of Carcinoma of Pylorus. M. Feldman.—p. 60.

Pernicious Anemia Without Achlorhydria.—Askey shows that it is entirely contrary to the history of Addisonian pernicious anemia to occur in the presence of gastric secretion of free hydrochloric acid. The precise diagnosis of Addisonian pernicious anemia requires: 1. Elimination of the conditions other than Addisonian pernicious anemia which may cause a loss of intrinsic factor. 2. A biologic assay showing absence of intrinsic factor. 3. A response to desiccated hog stomach, which furnishes ultimately the specific anti-pernicious anemia liver principle, or to a highly purified liver fraction, such as the Dakin-West fraction. These postulates, although rigid, are mandatory if pernicious anemia is to be diagnosed in an individual with acid present. The diagnosis not infrequently has been made and later proved to be wrong. Reports of 47 cases of pernicious anemia without achlorhydria by other observers are reviewed by the author. He shows that none of these have been proved by complete precise criteria to be Addisonian pernicious anemia. It would seem wise to restrict the term pernicious anemia to the true or Addisonian pernicious anemia characterized by absolute anacidity, loss of intrinsic factor

and reduction of the specific liver principle. Until precise critical tests have proved that acid secretion can persist in pernicious anemia, the presence of acid in any case must be considered as ruling out addisonian pernicious anemia. The existence of true pernicious anemia without anacidity as yet cannot be accepted.

Journal of Clinical Endocrinology, Springfield, Ill.

3:625-698 (Dec.) 1943

- *Five Cases (3 in Siblings) of Idiopathic Hypoparathyroidism Associated with Moniliasis. A. Sutphin, F. Albright and D. J. McCune.—p. 625.
Parathyroid Tetany Treated with Massive Doses of Vitamin D. E. L. Sevringhaus and Ruth St. John.—p. 635.
Combined versus Independent Hydrolysis and Extraction of Urinary 17-Ketosteroids, with Special Reference to Choice of Solvents. H. B. Friedgood, E. H. Taylor and M. L. Wright.—p. 638.
Dysfunctional Uterine Bleeding. K. J. Karnaky.—p. 648.

Idiopathic Hypoparathyroidism with Moniliasis.—Sutphin and his associates describe the histories of 5 patients in whom idiopathic hypoparathyroidism was accompanied by moniliasis. The first 3 of the patients were siblings. The authors discuss the association of moniliasis with hypoparathyroidism from four different points of view: (1) that there is no connection, (2) that hypoparathyroidism might be the result of moniliasis, (3) that moniliasis might result from hypoparathyroidism and (4) that both conditions might result from a third factor. They reach no definite conclusion but point out that the time relationships in the case histories suggest that the moniliasis precedes the hypoparathyroidism. Since the father and mother of patients 1, 2 and 3 were first cousins, and since all 3 patients, the father and other siblings had congenital hypochromic polycythemia, the possibility exists that the susceptibilities to monilia infection and to hypoparathyroidism are both connected with some defect in the germ plasm. The nail changes resulting from moniliasis did not improve in case 1 when the serum calcium was restored to normal by dihydrotachysterol therapy; they are therefore not to be confused with the nail changes which are part of a generalized ectodermal disorder that accompanies certain cases of hypoparathyroidism and are relieved by specific therapy. Furthermore, the fact that the changes were confined to the fingernails and did not involve the toenails suggests an infectious as opposed to a metabolic etiology. With the Ellsworth-Howard test it was demonstrated that case 1 reacted normally to parathyroid injection; this rules out "pseudohypoparathyroidism." Attention is called to the previously reported association of papilledema and increased intracranial pressure with hypoparathyroidism; their combination in case 1 with jacksonian epilepsy led to the faulty diagnosis of brain tumor. The authors also point out that other observers have reported the histories of 2 siblings in both of whom moniliasis was associated with Addison's disease and in 1 of whom hypoparathyroidism was also present.

Journal Neuropath. and Exper. Neurology, Baltimore

3:1-100 (Jan.) 1944

- Subependymal Cell Plate (Matrix) and Its Relationship to Brain Tumors of Ependymal Type. J. H. Globus and H. Kuhlbeck.—p. 1.
*Infantile Toxoplasmic Encephalitis, Report of Case. G. Steiner and D. H. Kaump.—p. 36.
Spontaneous Striatal Degeneration in Monkey. R. Richter and H. Klüver.—p. 49.
Congenital Agyria and Defect of Corpus Callosum. H. Josephy.—p. 63.
Effects of Lesions of Periaqueductal Gray Matter on Macaca Mulatta. P. Bailey and E. W. Davis.—p. 69.
Syndrome of Anterior Spinal Artery of Medulla Oblongata. C. Davison.—p. 73.
Pathologic Changes in Brain After Electric Shock: Experimental Study on Dogs. W. L. Lidbeck, with technical assistance of Lurline Green.—p. 81.
Behavior Disturbances Related to Decomposition of Reflex Activity Caused by Cerebral Injury: Experimental Study of Cat; Review. O. R. Langworthy.—p. 87.

Infantile Toxoplasmic Encephalitis.—The following characteristics are presented by toxoplasmic encephalitis in infants, according to Steiner and Kaump: The onset of symptoms is at birth or during the first weeks of infancy; convulsions and possibly other organic neurologic manifestations, internal hydrocephalus, chorioretinitis and cerebral calcifications are present which can be demonstrated by x-ray studies. The cerebrospinal fluid yields a high protein content, an increased cell count and

occasional xanthochromia. Pathologically the disease is characterized by focal meningeal and cerebral inflammatory lesions, necrotic areas showing advanced calcification, miliary granulomas and the presence of the causative organism either singly or multiple in cysts. The toxoplasma is a parasite classified as a protozoan. The mode of transmission and the port of entry into the human body are not known. Pregnant women seem to transmit the disease to their offspring before birth without themselves acquiring clinical manifestations. The authors present a case of infantile toxoplasmic encephalitis. It was complicated by erythroblastosis fetalis. Toxoplasmic encephalitis in its severe form is essentially a disease of early infancy and appears to be acquired in late prenatal life. The immature brain of late prenatal and early postnatal life appears to be susceptible to toxoplasmic infection; the infantile meninges and brain appear to have a low resistance to toxoplasmas. The fully developed toxoplasmic cyst produces no reaction and no granuloma. When the cyst ruptures there is at first likewise no reaction. However, as the parasites begin to spread, formation of a granuloma begins. The final reaction to the free toxoplasmas is the fully developed granulomatous lesion. The diagnostic criteria in infantile toxoplasmic encephalitis include gross and microscopic pathologic changes, morphologic identification of the organism, the clinical picture, the isolation of the organism and the presence of immune bodies in the blood of the mother and the infant. The history and the gross and microscopic aspects of calcification, necrosis, inflammation, parasitic cysts and single parasites are of greatest importance in establishing a diagnosis.

Journal of Pediatrics, St. Louis

24:1-122 (Jan.) 1944

- *Subdural Hematoma in Infancy. F. D. Ingraham and D. D. Matson.—p. 1.
Etiology of Congenital Cerebral Palsy: Statistical and Clinical Study. H. Yannet.—p. 38.
Clinical Modification of Whooping Cough by Use of Alum Precipitated Diphtheria Toxoid: Experimental and Clinical Studies. J. Muñoz Turnbull and G. Varela.—p. 46.
*Treatment of Epidemic Diarrheas and Dysenteries in Infants and Young Children: Comparative Study of Different Treatments and Their Results. K. Glaser and J. W. Bruce.—p. 53.
Problems in Management of Rheumatic Disease in Childhood. L. M. Taran.—p. 62.
Static and Dynamic Physical Fitness of Adolescents. J. R. Gallagher.—p. 81.
Effect of Rachitogenic Diets, Partial Inanition and Sex on Resistance of Cotton Rats to Virus of Poliomyelitis. H. M. Weaver, with technical assistance of Helen Ammon and Norma Hastings.—p. 88.

Subdural Hematoma in Infancy.—Ingraham and Matson present observations on 98 children with subdural hematoma, all of whom were treated under supervision of the neurosurgical service according to a uniform plan. This group includes only patients seen since 1937. Previous to 1937 only 2 or 3 patients a year with subdural hematoma were seen. The authors feel that the apparent rise in the incidence of the disease in their hospital population during the last six years is not a real one. Increased interest has led to a more diligent search for these patients, and the results have been gratifying. The authors stress that subdural hematoma is most frequently seen in the first six months of life. Trauma to the head is probably always a factor. There is no characteristic clinical picture. Generalized symptoms such as fever, vomiting, hyperirritability and failure to gain in weight are frequently found alone or in addition to the more specific neurologic findings of convulsions, stupor and paralysis. Infants who show early abnormal enlargement of the head should never be abandoned as having incurable hydrocephalus until subdural hematoma has been ruled out. The diagnosis can be made by bilateral puncture of the subdural space, the technic of which is described. The increase in brain volume during the first two years of life must be unrestricted to insure the normal mental development of a child. Therefore radical craniotomy with excision or wide decompression of constricting subdural membranes is essential if cerebral deficiency is to be avoided. Infants during the first two years of life will tolerate radical surgery well if proper preliminary measures and supportive treatment are undertaken. The therapy used at the Children's Hospital since 1937 is discussed. In all of the 98 children treated by the authors the diagnosis was made on the basis of subdural puncture. In 94 of these, bilateral

temporal burr holes were made. Sixty-two patients showed subdural membranes on one or both sides. Ninety-four craniotomies were performed, with an operative mortality of 5.3 per cent and a case mortality of 7.9 per cent. Of the 57 patients who have been adequately followed for periods of from 6 months up to 5 years of age, 23 per cent are retarded or grossly deficient and 77 per cent show normal behavior for their age. These results, it is felt, have sufficiently improved the outlook in subdural hematoma to call for a more diligent search for these infants. Whereas treatment is fundamentally a neurosurgical problem, suspicion of the diagnosis must rest primarily with the pediatrician and the general practitioner.

Treatment of Diarrheas and Dysenteries in Young Children.—Glaser and Bruce review observations on infants and children with epidemic diarrhea or dysentery who were treated in the Louisville General Hospital during July, August and September from 1938 to 1942, with special attention to the patients of 1942. They divide their patients into two groups, those with diarrhea and those with dysenteries. In the first group they placed all cases classified as nutritional diarrhea and those which were caused by parenteral infection. The second group contains all cases of "specific" diarrhea caused by organisms belonging to the dysentery group. Except for the isolation technic observed in dysentery and the different selection of sulfonamides, the authors have applied the same method of treatment in the two conditions. Rest is essential and was provided. During a period of starvation lasting twelve hours only water and medication were given. The prevention or treatment of dehydration is of greatest importance. By cup or bottle, water was offered at fifteen to thirty minute intervals. In cases of advanced dehydration or acidosis, fluid was given not only orally but also intravenously. By continuous drip through a fixed ankle vein cannula, a steady flow of isotonic solution of sodium chloride, 5 per cent dextrose in sterile water or one of the two Hartmann's solutions was given for the first thirty-six hours. After hydration has improved, blood transfusions are of value. When hemoconcentration is too high, plasma has been given. The nonspecific type of diarrhea was treated with sulfathiazole and the specific diarrhea with sulfaguanidine. Because of delayed diagnosis, however, some specific types were treated with sulfathiazole. Bismuth compounds and camphorated tincture of opium were used only in resistant cases. In 1 instance polyvalent dysentery antiserum was used with striking result. Beginning twelve hours after admission the infants are given as much milk as they will take. The amount is neither limited nor forced. The orders read "Buttermilk as tolerated," or "Skimmed boiled milk ad libitum." The authors found this method successful. It has decreased not only the length of hospitalization but also the death rate.

Journal Pharmacology & Exper. Therap., Baltimore 80:1-117 (Jan.) 1944. Partial Index

- Vascular Fragility and Permeability as Influenced by Various Agents: I. Description of Experimental Method and of Effects of Various Substances Related to Vitamin P. G. J. Majovski, A. J. Lesser, H. C. Lawson, H. O. Carne and C. H. Thienes.—p. 1.
- Studies on Physostigmine and Related Substances: I. Quantitative Relation Between Dosage of Physostigmine and Inhibition of Cholinesterase Activity in Blood Serum of Dogs. O. Kraye, A. Goldstein and F. L. Plachte.—p. 8.
- Methemoglobinemia After Administration of p-Amino-Acetophenone and p-Aminopropiophenone. J. M. Vandenbelt, C. Pfeiffer, Margaret Kaiser and Margaret Sibert.—p. 31.
- Pharmacologic Action of Erythrina Alkaloids. K. Unna, M. Kniazuk and J. G. Greslin.—p. 39.
- Pharmacologic Study of Extract of Erythrina Crista Galli (Ceibo). R. Pichard and J. V. Loco.—p. 62.
- Distribution of Radiant Energy in Fluorescent Spectra of Atabrine and Some Other Derivatives of Acridine. T. C. Butler.—p. 70.
- Formation of Methemoglobin: III. Influence of Total Hemoglobin on Formation of Methemoglobin from Acetanilide. G. Lolli, D. Lester and Miriam Rubin.—p. 74.
- *Detoxication of Neoarsphenamine by Means of Various Organic Acids. E. W. McChesney, O. W. Barlow and G. H. Klinek Jr.—p. 81.
- Pharmacologic Basis for the Widely Varying Toxicity of Arsenicals. R. B. Hogan and H. Eagle.—p. 93.
- Determination of Salicylic Acid in Plasma. B. B. Brodie, S. Udenfriend and A. F. Coburn.—p. 114.

Detoxication of Neoarsphenamine by Various Organic Acids.—McChesney and his collaborators made further studies on the detoxifying action of several organic acids, particularly ascorbic acid, on neoarsphenamine. They found that the toxicity of neoarsphenamine for albino rats is materially reduced by

ascorbic, isoascorbic, d-glucoscorbic and p-aminobenzoic acids. The most favorable effect is obtained if the arsenical and protective agent are injected intravenously in the same solution, but the acids are somewhat effective if injected simultaneously at another site. The function of the ascorbic acids appears to be primarily that of preventing oxidation, chiefly after injection. The mechanism by which p-aminobenzoic acid reduces toxicity is obviously different. There is evidence that the therapeutic efficiency of some typical arsenicals is not altered by the detoxicants.

Journal of Urology, Baltimore

51:1-116 (Jan.) 1944. Partial Index

- *Renal Cysts, Simple and Otherwise. W. F. Braasch and J. A. Hendrick.—p. 1.
- Secondary Bacteriuria Associated with Renal Tuberculosis. R. W. Corbitt.—p. 11.
- Postcaval Ureter. C. L. Wilson and J. Herzlich.—p. 14.
- Ureterocele with Prolapse Through Urethra. J. L. Emmett and G. B. Logan.—p. 19.
- Congenital Hourglass Bladder. J. Zellermyer and H. E. Carlson.—p. 24.
- Lymphosarcoma of Urinary Bladder. N. P. Rathbun and H. L. Wehrlein.—p. 31.
- Course of Prostatic Ducts and Anatomy, Chemical and X-Ray Diffraction Analysis of Prostatic Calculi. C. Huggins and R. S. Bear.—p. 37.
- Calculi of Prostate Associated with Ochronosis and Alkaptonuria. H. H. Young.—p. 48.
- Technic of Prostatic Biopsy. A. A. Roth and H. Turkel.—p. 66.
- Determination of Blood Loss During Transurethral Resection. H. L. Kretschmer and E. P. Ockuly.—p. 69.
- Cavernous Hemangioma of Testicle. R. P. Morehead and W. C. Thomas.—p. 72.
- *Carcinoma of Spermatic Cord and Epididymis Extension from Primary Carcinoma of Stomach. L. G. Lewis, W. E. Goodwin and W. S. Randall.—p. 75.
- Influence of Aniline Dyes on Urinary Tract Tumors. D. K. Rose.—p. 81.
- Clinical Application of Urea Spot Test. M. Plotz, N. E. Reich and H. N. Naumann.—p. 85.
- Recent Cases Illustrating Dangers of Sulfa Drugs. J. K. Ormond and R. B. Roth.—p. 92.
- Sulfonamide Anuria. J. C. McClelland.—p. 97.
- Combined Antimicrobial Activity of Urea and Sulfathiazole in Urine. E. R. Neter and Phyllis Clark.—p. 101.
- Chemical Basis of Uremia: Blood Phenol. P. R. Roen.—p. 110.

Renal Cysts.—According to Braasch and Hendrick, renal cysts are formed by retention of renal secretion consequent to obstruction in the renal tubules. They assume clinical significance only when they become so large or so numerous as to cause renal dysfunction or when they become apparent on physical or urographic examination. The authors limit this discussion largely to the clinical data involving the so-called simple cyst. They show that the term solitary cyst applied to a renal cyst is a misnomer. Examination at operation or at necropsy usually reveals other small cysts in one or both kidneys. Urography, either excretory or retrograde, offers the simplest form of diagnosis. The excretory urogram will offer sufficient diagnostic data in many cases, but greater accuracy usually is obtained by the retrograde urogram. The differentiation of urographic deformity caused by renal cyst from that caused by renal neoplasm may be exceedingly difficult and is a frequent cause of diagnostic error. In most cases surgical exploration will be advisable in order to establish an accurate diagnosis. Multiple simple cysts may be confused on surgical exploration with polycystic disease. Multilocular cysts differ from the ordinary type of multiple simple cyst in that a single large cyst is subdivided into smaller segments. Peripelvic (pyelogenic) cysts are differentiated from simple renal cysts in causation, clinical course and treatment. Cystic hypernephroma occasionally may be confused with simple cyst, both on clinical and on casual surgical examination. Hypertension seldom is caused by simple cysts. The frequent incidence of hypertension in cases of polycystic disease is in contrast. Aspiration of cysts as a diagnostic procedure occasionally may be indicated in cases in which surgical exploration is inadvisable. The procedure, however, may be unsatisfactory because of possible error of diagnosis and complications which may follow it. Surgical exploration usually is more satisfactory than aspiration, and surgical excision of the cyst is a better treatment.

Carcinoma of Spermatic Cord and Epididymis Extension from Carcinoma of Stomach.—Lewis and his associates present the history of a 19 year old private in whom a swelling in the right scrotum was the presenting symptom. The diag-

nosis was at first obscure, as the early appearance of the scrotal mass overshadowed the relatively minimal gastrointestinal symptoms. Removal of the scrotal mass disclosed an anaplastic carcinoma. The patient died about six weeks later, and necropsy disclosed primary carcinoma of the stomach with extension by direct peritoneal implant down both inguinal canals involving the cords on both sides and the epididymis on the right side. The family history revealed that the father and a paternal uncle both had died of cancer at an early age. This stresses the importance of familial tendency in cancer. This is only the fourth report of the extension of an intra-abdominal tumor to the spermatic cord and epididymis. This case emphasizes to the urologist the importance of looking further afield in obscure cases of testicular disease.

Laryngoscope, St. Louis

54:1-54 (Jan.) 1944

- Chondroma of Larynx: Review of Literature and Report of 2 Cases. J. W. McCall, S. M. Dupertuis and F. S. Gardiner.—p. 1.
Nasoalveolar Cysts. F. A. Sooy.—p. 18.
Training for Optimum Use of Hearing Aids. S. R. Silverman.—p. 29.
Review of Articles on Tuberculosis in Field of Otolaryngology Chiefly for Late 1942 and Early 1943. F. R. Spencer.—p. 37.

Military Surgeon, Washington, D. C.

94:65-130 (Feb.) 1944

- Burns Incident to War: Measures for Their Prevention and for Treatment. L. H. Roddis.—p. 65.
Teamwork on Health Front. T. Parran.—p. 76.
Air Evacuation. D. N. W. Grant.—p. 80.
Veterans' Problems of Present War. F. T. Hines.—p. 82.
Preventive Medicine at Front. J. S. Simmons.—p. 85.
Today and Tomorrow in Aviation Medicine. W. S. Jensen.—p. 89.
War Dentistry. J. C. Brauer.—p. 93.
Use of Medical Service of Fixed Hospital in Air Attack on Oahu, Hawaiian Islands, Dec. 7, 1941. F. E. Weatherby.—p. 95.
Amphibious Operations. D. S. Knowlton.—p. 96.
The Shipwrecked. P. H. Fletcher.—p. 100.
Cases Rejected for Army Service on Basis of Chest Films Alone. W. D. Wise.—p. 103.
Predetermining Dental Survey. S. L. Beckwith-Ewell.—p. 104.
Acute Meningococcemia. B. M. Schwartz, J. T. Thornton Jr. and C. J. Lundy.—p. 105.
*Rapid Detection of Sugar in Urine: Using a Modified Bismuth Oxychloride Spot Test. F. P. Guidotti and J. H. Winer.—p. 111.

Rapid Detection of Sugar in Urine.—Guidotti and Winer point out that Matticé suggested the dry hygroscopic bismuth oxychloride powder mixture (galatest), having used it successfully for screening out the "negatives" in a diabetic clinic. To determine the accuracy of this test, comparative series of 15,000 urine specimens were studied using the bismuth powder and Benedict's test simultaneously. The powder test proved valuable. Small heaps of dry powder are placed in rows on white paper and are pressed down lightly with the bottom of the vial. One small drop of urine is deposited on the powder. When positive, the white powder turns gray or black instantly. In the comparative tests the urine was simultaneously added to the preheated Benedict's solution. The powder does not give a satisfactory quantitative estimation; therefore Benedict's test is necessary for rechecks, which are performed when sugar is found. The authors conclude that the accuracy, reliability and speed of mass urinalysis are enhanced by the use of a dry bismuth oxychloride mixture for spot test examination for sugar.

New England Journal of Medicine, Boston

230:63-94 (Jan. 20) 1944

- Refrigeration in Surgery of Extremities. P. R. Hinchey.—p. 63.
*Eruptive Fever Involving Mouth and Eyes (Stevens-Johnson's Disease): Report of Case. R. C. Murphy Jr.—p. 69.
Pulmonary Actinomycosis: Treatment with Sulfonamides. N. R. Pillsbury and J. D. Wassersug.—p. 72.
Abdominal Surgery. A. W. Allen.—p. 74.

Eruptive Fever Involving Mouth and Eyes.—Murphy reports that a man aged 22 was hospitalized three days after he had noticed a swelling between the upper lip and the gum. Later blisters began to appear on the buccal mucous membrane. At the time of hospitalization he had a temperature of 101 F. The conjunctivas were diffusely inflamed. The buccal mucous membrane, gums, palate and uvula were covered with many tight

vesicles. There was also a small amount of red inflammatory reaction and sticky exudate about the urethral meatus. During the first two days of hospitalization the disease ran an alarming, fulminating course. The temperature rose rapidly and ran a hectic course, up to 104.6 F. All the pearl-like vesicles in the mouth ruptured, leaving a loose, dirty, whitish slough. By the third day there was a massive slough involving the entire mucous membrane of the mouth and sparing only the tongue. The nasal mucous membrane sloughed in a less dramatic manner. Large blebs appeared on the glans penis also with superficial sloughs. Both conjunctivas were inflamed, but no vesicles formed about the eyes. A semipurulent exudate flowed continually from the eyes. On the arms and legs punctate red areas appeared and expanded, and in the center of each a vesicle appeared. These vesicles ripened into thin walled bullas and ruptured. On the fifth day the temperature fell and the patient began to improve. The sloughs in the mouth and on the penis were not complete before the third week. A conjunctival culture yielded *Staphylococcus aureus*. Smears of the bullas were negative both for eosinophilic polymorphonuclear leukocytes and for organisms. No significant evidence of the heavy metals was found on qualitative tests of two twenty-four hour urine specimens. The patient had had a mercury-amalgam tooth filling one and one-half months previously, but no other significant metal or drug history could be elicited. The therapeutic measures included sulfadiazine for five days, the forcing of fluids, colonic irrigations, calcium gluconate intravenously and salves, washes and other local applications to the mouth, penis and eyes. At the end of seventeen days the skin lesions had crusted and mostly fallen away. The author says that nothing is known of the fundamental nature of the disease or of its etiology. Neither drugs nor Vincent's organisms have been implicated. The disease is not typical of erythema multiforme, and it is the enanthem rather than the exanthem that is its constant feature.

Pennsylvania Medical Journal, Harrisburg

47:417-544 (Feb.) 1944

- Complications of Acute Mastoiditis. R. L. Moorhead.—p. 431.
Panel Presentation on Art and Science of Therapeutics. A. H. Aaron.—p. 440.
Use and Abuse of Sulfonamides in Surgery. C. M. Smyth Jr.—p. 446.
Use and Abuse of Sulfonamides in General Practice. H. A. Reimann.—p. 448.
Use and Abuse of Barbiturates. H. B. Gardner.—p. 451.
Primary Carcinoma of Lung: Review of 30 Proved Cases. L. M. J. Freedman, H. W. Jacox and R. G. Alley.—p. 455.
Physiology of Nose and Its Bearing on Treatment. D. S. DeStio.—p. 461.
Industrial Injuries to Fingers. J. J. Toland Jr. and I. H. Kornbluh.—p. 466.
Obstetric Deaths in 1942 (Philadelphia) Resulting from Operative Delivery Other Than Cesarean Section. J. M. Alesbury.—p. 474.
Comparison of Results of Intracapsular and Extracapsular Cataract Extraction. H. C. Fulton.—p. 478.
Pediatrician's Role in Speech Correction. E. L. Piper.—p. 483.
Pelvic Myofibromas of Extrauterine Origin. C. G. Strickland.—p. 489.

Virginia Medical Monthly, Richmond

71:57-112 (Feb.) 1944

- Red Cross Activities at Home and Abroad. B. M. Jones.—p. 59.
Penicillin in Treatment of Osteomyelitis and Other Infections: Case Report. M. A. Pittman.—p. 66.
Prevention of Tetanus. J. H. Lyons.—p. 71.
Newer Treatments in Neuropsychiatry. Beverley R. Tucker.—p. 75.
Kenny Treatment for Infantile Paralysis: Year's Observation of 6 Cases. C. J. Frankel.—p. 79.
Medicine Under Czars and Under Stalin. J. Krimsky.—p. 84.
Physician's Responsibility and Relation to Community. C. L. Harrell.—p. 88.
Breeding Better People for Peace: Human Nature Can Be Changed. J. S. Horsley.—p. 93.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

52:41-86 (Feb.) 1944

- Recovery of Primate Eggs and Embryos: Methods and Data on the Time of Ovulation. C. G. Hartman.—p. 41.
Physiologic Intermenstrual Bleeding—Gross or Microscopic—As a Possible Diagnostic Aid in Abdominal Pain Studies. R. N. Rutherford.—p. 62.
Duodenal Obstruction and Stasis. M. S. Rosenblatt.—p. 69.
Idiopathic Spontaneous Pneumothorax. S. H. Babington.—p. 73.
Recent Advances in Allergy. P. Schonwald.—p. 77.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

55:289-324 (Dec.) 1943

Familial Xanthomatosis. J. C. Swanson.—p. 289.

Note on Case of Blastomycosis Cured by Sulfapyridine and Sulfathiazole. M. Albert.—p. 294.

Naevus Aeneiformis Unilateralis. E. L. Cohen.—p. 297.

Journal of Physiology, Cambridge

102:259-372 (Dec. 31) 1943. Partial Index

Effect of Barbiturates on Serum Cholinesterase. F. Schütz.—p. 259.
Antagonism Between Posterior Pituitary Lobe and Insulin. L. Wislicki.—p. 274.

Influence of Sympathetic Nervous System on Capillary Permeability in Traumatic Shock. D. Engel.—p. 281.

Blood Volume of Normal Animals. F. C. Courtice.—p. 290.

Differentiation in Absorption of Olive Oil and Oleic Acid in Rat. A. C. Frazer.—p. 306.

Some Experiments on Possible Relationship Between Vitamin C and Calcification. G. H. Bourne.—p. 319.

Lipolysis and Fat Absorption. A. C. Frazer.—p. 329.

Output of Cortical Hormone by Mammalian Suprarenal. Marthe Vogt.—p. 341.

Metabolism of Phosphate and Carbohydrate in Extracts of Human Muscle and Brain. G. D. Greville and H. Lehmann.—p. 357.

Alkali in Pancreatic Secretion. C. O. Oldfelt.—p. 362.

Lancet, London

1:39-72 (Jan. 8) 1944

*Sulfonamide Dermatitis: Sensitization from Local Application. B. C. Tate and I. Klorfajn.—p. 39.

Gunshot Wounds of Fronto-Orbital Region.—p. 44.

Tender Muscles in Sciatica: Electromyographic Studies. F. A. Elliott.—p. 47.

Phemeride: New Antiseptic Detergent. C. N. Hand.—p. 49.

Deposit in Seitz-Filtered Serum. G. E. C. Francis, G. A. Harrison and L. E. R. Picken.—p. 51.

Convulsions Under Anesthesia Treated by Change of Posture. A. Smith.—p. 52.

Sulfonamide Dermatitis from Local Application.—Tate and Klorfajn report that 55 of a total of 2,280 admissions to the skin department of a military hospital were cases of sulfonamide dermatitis produced by local applications of these drugs. After a period of sulfonamide application to some skin disease or minor injury an irritating dermatitis appeared. At first it was confined to the area under treatment ("primary eruption") and in 2 cases it remained so localized; but, in the rest, other regions, to which no sulfonamide had been applied, became affected ("secondary eruption"). The secondary eruption usually had the distribution commonly seen in sensitization to other chemicals, but in 4 cases it was strictly limited to areas exposed to light, and in 2 others, though covered areas were affected, it was especially severe on the exposed parts. The dermatitis was always eczematous, i. e. an inflammatory reaction with edema of the skin and innumerable intraepidermic vesicles scattered throughout the affected area. Some cases presented a more or less generalized weeping eczema; but the severity varied, depending largely on the length of time sulfonamide therapy was continued after sensitization had been established. Constitutional symptoms were commensurate with the severity of the eruption. Sulfanilamide had been used in most cases, but in 3 sulfapyridine appeared to be the offender. The diagnosis was suggested by the history, character and distribution of the eruption and was confirmed by patch tests and oral administration of sulfonamides. Patients sensitized to one of the sulfonamide drugs are thereafter sensitive to other members of the group. Sensitization may be so intense as to preclude subsequent administration of these drugs for other diseases. The authors conclude that topical sulfonamide therapy for skin diseases and minor injuries is unjustifiable. It should be reserved for cases in which withholding it might endanger life or lead to deformity.

Tender Muscles in Sciatica.—Elliott records observations on the tender spots, sometimes described as nodules, found in the muscles of the buttock and calf in certain cases of sciatica. They commonly occur in muscles with an extensor function, are sharply localized and, when palpated, give rise to pain, which

may radiate down the limb. Both the local tenderness and the sciatica itself can in some cases be abolished by injecting procaine into the tender spots. Contemporary writers believe that these tender spots are the site of an inflammatory or rheumatic process which gives rise to referred sciatic pain and that the successful exhibition of procaine confirms the diagnosis and excludes other causes. It is not generally recognized that tender spots indistinguishable from the more benign forms of myalgia may be found in the muscles supplied by an irritated nerve root. This is most commonly encountered in sciatica as the result of prolapse of the nucleus pulposus but also occurs in spinal tumors. The author demonstrates this on the basis of 2 case histories. Since the tender spots are confined to the muscles innervated by the affected root and disappear when the source of irritation is removed by operation, an inflammatory origin can be excluded. Use was made of the fact that contracting muscle gives rise to action potentials which can be recorded by an electromyograph. A table shows observations on 14 cases of sciatica in which a prolapsed disk was found at operation. In 8 cases there was local tenderness and in 6 controls there was none. The insertion of the needle electrode into normal muscle evoked a momentary contraction of a few fibers. In the case of tender muscles this initial contraction affects more fibers and may be sustained for a second or two; i. e., the irritability is increased, and deep palpation of the surrounding muscle gives rise to fresh bursts of motor activity. The increase is limited to the tender areas of muscle and has been found in almost every case of deep tenderness. The author considers how these irritable foci can arise. The spasm is thought to be the source of pain and tenderness. Similar activity has been recorded in "fibrositis" of the shoulder girdle and in the extensor muscles of the arm and forearm in cases of "brachial neuritis" both with and without root signs. Muscle spasm is consequently considered to play a part in what may for convenience be called the rheumatic myalgias as well as in the less common root syndromes.

Medical Journal of Australia, Sydney

2:473-488 (Dec. 11) 1943

Shift to Higher Age Levels in Australia and United States: Its Sociological and Medical Interest. C. V. Crockett.—p. 473.

*Temperature in Shock: I. Local Effects. J. Devine.—p. 476.

Isolation of Pleuropneumonia-like Organisms from the Male Urethra. W. I. B. Beveridge.—p. 479.

Temperature in Shock.—It was Devine's impression that among the casualties in the hospital at Tobruk those who had been for some hours in the sea, in the cold of the Mediterranean winter, arrived at the hospital in good general condition, even though they had extensive burns and wounds, and that they appeared to be in better condition than those who came from the surrounding land areas. These men had all been chilled generally as well as locally. The author decided to investigate whether the local application of a moderate degree of cold would decrease the local loss of plasma following shock-producing trauma. He describes experiments on 9 dogs in which a leg was subjected to trauma by blows with a mallet after a tourniquet had been put on. Then, with the tourniquet still in position, the leg was placed in a water bath at 50 C. for twenty minutes. This procedure had been found to produce shock when the tourniquet was released. When the tourniquet was released, the water was kept at 50 C. in 3 of the dogs, and in that of 3 others it was kept at about 8 C. The carotid blood pressure was continuously recorded, and every ten minutes the limb volume was recorded. The local increase in limb volume of those limbs kept at an average temperature of 52 C. was over three times that of limbs kept at an average temperature of 8 C. Only one dog whose leg was kept in a warm bath was alive at the end of one hundred minutes following the release of the tourniquet. The clinical application of the reported experimental work is that, first, heat should not be applied in the neighborhood of injuries that are likely to cause shock, for if this is done local loss of circulating fluid to the tissues will be increased; second, cooling of a traumatized limb may be effective in lessening the local loss of fluid from the circulation and may thus, in the light of experimental work published by others, be helpful in modifying the onset of shock.

Book Notices

The Techniques of Self-Help in Psychiatric After-Care Developed by Recovery, Inc., the Association of Former Mental Patients. Volume I: Recovery's Self-Help Techniques, History and Description. By Abraham A. Low, M.D., Founder and President of Recovery, Inc. Paper. Price, \$1.25. Pp. 136. Chicago: Recovery, Inc., 1943.

The Techniques of Self-Help in Psychiatric After-Care Developed by Recovery, Inc., the Association of Former Mental Patients. Volume II: Group Psychotherapy: A Record of Class Interviews with Patients Suffering from Mental and Nervous Ailments. By Abraham A. Low, M.D., Founder and President of Recovery, Inc. Paper. Price, \$1.25. Pp. 88. Chicago: Recovery, Inc., 1943.

The Techniques of Self-Help in Psychiatric After-Care Developed by Recovery, Inc., the Association of Former Mental Patients. Volume III: Lectures to Relatives of Former Patients. By Abraham A. Low, M.D., Founder and President of Recovery, Inc. Paper. Price, \$1.25. Pp. 125. Chicago: Recovery, Inc., 1943.

The three books under discussion are not separate treatises but are continuations of one another and deal in the main with two problems: group psychotherapy and the mental hygiene care of patients after discharge from mental hospitals. Since the first world war psychiatry may be said to have passed from the strictly symptomatic and custodial type of treatment of mental illness and is attempting something by way of effective psychotherapy. From the standpoint of such treatment the problem forever confronting the psychiatric hospital is the small size of the staff that can devote its full time to psychotherapy as compared with the very large number of patients who need such treatment. The most effective form of psychotherapy so far devised is psychoanalysis, but it is based primarily on a very intimate personal relationship of the psychotherapist to the patient, so that with one patient being handled at one time the total number of patients that can be so handled must of necessity be very small. While the few patients under such care profit a great deal by the therapy, the rest remain untreated. For this reason there have been from time to time attempts on the part of psychiatrists to circumvent this rather luxurious form of treatment and devise means whereby a large number can be treated with sufficient effectiveness to make it worth while.

In 1920 Dr. Edward Lazell, then at St. Elizabeths Hospital, Washington, D. C., attempted psychotherapy by discussing general psychotherapeutic problems before a group of patients. Later on Dr. Louis Wender, then at Hastings Hospital, New York, did quite effective work in group psychotherapy, of which he has published reports. At about the same time Schilder made like attempts at Bellevue. It is this type of work that Professor Low has been doing since 1937. It is realized, of course, even by those not necessarily committed to the psychoanalytic approach, that, at best, group psychotherapy can be effective only at a superficial level and can never reach the depths at which the basic conflicts are formed. The reason for this is that the most intimate aspects of a person's life could hardly be revealed in the presence of others, for such presence acts as an inhibitor for fuller catharsis. Withal, and in spite of its limitations, group psychotherapy is a decidedly profitable endeavor if one only bears in mind that it is not basic and final. It can no doubt reach a certain type of patient who needs but little push to start him on the road to recovery. To other patients it can provide partial insight that may help them to be discharged as improved or socially recovered—not complete cures to be sure, yet sufficient to help toward rehabilitation.

The brochure dealing with group psychotherapy is written in a fine and fluent style and can be easily understood by any one with only a high school education. The other two brochures take up a problem primarily of patients who have already recovered. This is really an extension of mental hygiene work: a type of extramural psychiatry, however, which has been practiced but little. It attempts a follow-up of patients who have been confined by an illness to a psychiatric institution. Many of the discussions are reprints of articles published in a previously published medium, "Lost and Found Journal," which accounts for a great deal of repetition; yet one does not object to these so much because these repetitions really tend to emphasize the problem. This "after-hospital care" helps to reduce the number of relapses which often come from the social isolation

tion due, in turn, to the stigma that is as yet attached to the problem of mental illness. It must be a pleasure and satisfaction to see the many men and women coming together without a consciousness of stigma and embarrassment. Admittedly, this "recovery self-help project" has not entirely eradicated the stigma connected with mental disease, but certainly it has robbed it of a good deal of its malignant force. The remark made by others may hurt the past patient and may even make him feel unhappy, but it does not make him feel guilty and certainly not abnormal.

In the third booklet, "Helpful and Healthy Advice," the same is given to relatives of former patients—what are the best things they can do to steer the patient toward complete mental health. It is attractively and delightfully written.

In all, these three booklets represent a real advance in our understanding and treatment of psychiatric problems. The reviewer wishes they could be reprinted in quantities of thousands, distributed to relatives of patients after the patients have been discharged or, for that matter, before discharge. It would go a long way toward the better management of mental illness and remove what prejudice and stigma still exist in the public mind.

Clinical Audiometry. By C. C. Bunch, M.A., Ph.D., Associate in Research Otology, Johns Hopkins University, Baltimore. Cloth. Price, \$4. Pp. 186, with 74 illustrations. St. Louis: C. V. Mosby Company, 1943.

This volume is packed with significant advice on the practical aspects of testing hearing of a patient, whether an adult or a child. Particular attention, as the title indicates, is given to the use of the audiometer. The book contains a historical account of testing hearing by the tuning fork and the development of the modern audiometer. Being a codesigner of an audiometer, the author recorded a complete account of early experimentation in the field. He had a wide experience with audiometers in clinical applications, and the technic described in chapter III necessarily carries much weight. There are chapters on conductive and perceptive types of deafness and on the value of residual hearing.

The author devoted a chapter to the controversial field of selecting a hearing aid with the use of an audiometer. He assumes that the audiometer is of value for this purpose, but to the question "Can an otologist send an audiogram to a manufacturer with the assurance that a hearing aid will be selected to compensate for the losses shown in that audiogram?" he answered in the negative. He summed up by stating that in the final analysis the ability to hear and understand speech in a familiar language is the real test of a hearing aid.

Valuable advice is given on the construction of the sound-proof room for use in audiometry. Since the author had considerable experience regarding the building of quiet rooms, this chapter is extremely interesting.

This book by the late Dr. Bunch deserves a place in all libraries of physicians who treat the ear.

La novela de las vitaminas. Por el Dr. Arturo León López. Con un prólogo del Profesor Doctor Pedro Escudero. Cloth. Price, \$12.—m/arg. Pp. 449, with illustrations. Buenos Aires: Orientación Integral Humana Soc. de Resp. Ltda., 1943.

In this unusually well bound and illustrated book is presented the story of the discovery and development of the vitamins now recognized as having definite functions in the animal and human body. The romanticism surrounding the early interest in many of the vitamins is woven into their stories, thereby enhancing the appeal of the book for popular reading. The author makes generous use of pictorial sketches to demonstrate a close family relationship of certain vitamins or to depict the selective effects of given vitamins on various organs or systems of the body. In some cases the impression given by these diagrams implies more than the facts warrant. Another attractive feature is the inclusion of halftone portraits of scientists credited with being the pioneers in the various vitamin fields.

The statements throughout the book appear to be based on scientific fact and are so artfully woven into the stories of the vitamins that they make pleasant reading. As an additional contribution the author makes sound recommendations as to the value of hygiene and good food. Lists are given of foods which are known to contain particularly significant amounts of the

be some danger under those circumstances which ought to be avoided. If this method of heating is essential, arrangements should be made for good ventilation of the fumes from the fire and careful handling of the fire ashes, which would contain lead.

SPLENOMEGALY AND ANEMIA ASSOCIATED WITH SULFONAMIDE THERAPY

To the Editor:—Can you tell me if splenomegaly with severe anemia is a possible toxic manifestation of sulfonamide poisoning? A girl aged 7 became ill during the first part of July. A diagnosis of rheumatic fever was made, and the patient was treated quite extensively with sulfonamides. Treatment for rheumatic fever continued until September, when the patient was taken to my brother, who found an immense spleen and severe anemia. I first saw the patient in consultation with him; the spleen pretty well filled the left side of the abdomen, the red blood cell count was below 2 million and the white blood cell count was between 10,000 and 15,000, with picture said to be consistent with chronic leukemia. Blood transfusions revived the patient several times, but she recently died. The predominant picture throughout was the enlarged spleen and the severe anemia. The white blood cell count was never outside normal limits. Is there any possibility that the sulfonamides she took caused the fatal condition to develop? Is enlarged spleen ever a result of sulfonamide poisoning?

Melvin A. Drake, M.D., Buhl, Idaho.

ANSWER.—Splenomegaly and severe anemia may be caused by sulfonamide therapy. These findings have occurred in patients who have developed an acute hemolytic anemia as a result of sulfanilamide medication. Splenomegaly is not uncommonly associated with sulfathiazole therapy, and under these circumstances the splenic enlargement is usually only one of the manifestations of drug hypersensitivity. The patients usually have an associated fever and dermatitis. Anemia is not usually a pronounced finding. Unfortunately, as far as the present case is concerned, splenomegaly and severe anemia may be associated with acute rheumatic fever and also with chronic leukemia. From the data given, it would appear that the patient died because of chronic leukemia and not because of rheumatic fever. To date there is no reason to believe that sulfonamide therapy will cause leukemia, and no evidence has been offered in favor of this thesis. If the patient had unqualified evidence of leukemia as detected in the peripheral blood films, one can only conclude on the basis of present knowledge that the sulfonamide therapy did not play any part in its development.

SECRETORY PHASE OF ENDOMETRIUM AND OVULATION

To the Editor:—Does a lack of so-called secretory activity of the premenstrual endometrium always mean that ovulation has not taken place that month? How long before menstruation is it wise to take the endometrial biopsy for this test? Is four or five days before menstruation began too early for the secretory activity to show up on biopsy if ovulation has taken place? The statement is made by some that if a woman has primary dysmenorrhea it means that she has ovulated that month. Is this statement true?

M.D., Virginia.

ANSWER.—The typical secretory phase in the endometrium is usually indicative of ovulation. Although the endometrial pattern should be typical of the secretory phase four to five days before menstruation, it is well to postpone the endometrial biopsy until the onset of bleeding. This precludes the possibility of interfering with an early pregnancy. The cervical canal is more patulous at this time. Although functional dysmenorrhea is usually associated with an ovulatory cycle, its presence is not proof that ovulation has preceded menstruation. In the endocrine treatment of dysmenorrhea endometrial biopsies have revealed that ovulation can be followed by a relatively painless menstrual period.

DEVELOPMENT OF RH AGGLUTININS

To the Editor:—Assuming that an Rh negative woman is married to an Rh positive man, what would be the percentage probability that anti Rh isoagglutinins would be formed in her blood (1) in her first pregnancy and (2) in the second and subsequent pregnancies? Will the fetus necessarily have erythroblastosis if the mother has anti Rh isoagglutinins in her blood?

Captain, M. C., A. U. S.

ANSWER.—The first two questions cannot be answered satisfactorily at this time. The variability of the factors concerned, e. g. variations in the permeability of the placenta, the occurrence of mild forms of erythroblastosis, the inheritance by the father of the Rh factor from both parents (homozygosis) or from only one (heterozygosis) prevent the determination of any reliable percentage probability at present. Experience does indicate that the development of anti Rh agglutinins in Rh negative women may increase with each pregnancy. The child of a mother with anti Rh agglutinins is not necessarily the subject of clinically recognizable erythroblastosis. Such cases have been observed.

PROBABLE ALLERGY TO TOPICAL MERCURIAL PREPARATIONS

To the Editor:—About three weeks ago I applied tincture of merthiolate 1:1,000 to a few minor scratches on my arms and legs. Shortly after an intensely itching dermatitis developed which does not seem to abate with various ointments and lotions. At first the dermatitis was confined to the sites of the original application of the merthiolate, but now it is spreading to other areas. I have used "Amertan" and "Merthiolate Cream" but the reaction resulted only in an intensification of the symptoms. Plainly I am allergic to or have an idiosyncrasy to merthiolate in any dilution or form. Please let me know of any medication I might use for the relief of this condition.

M.D., Connecticut.

ANSWER.—It is probable that the skin condition described is due to allergy to mercury, either newly acquired or more severe than had previously been present. This conclusion is based on the fact that merthiolate (an organic mercurial) is the common constituent of Tincture of Merthiolate, of Merthiolate Cream and of Amertan. The latter is a 5 per cent tannic acid ointment containing 1:5,000 merthiolate.

The treatment for this condition is, first, to eliminate all possible contact with any mercurial compound and, secondly, to use either protective or soothing applications, depending on the state of the lesions. During the acute phases of such a dermatitis, wet applications are usually most beneficial, i. e. cold saturated boric acid solution, diluted solution of aluminum acetate (Burow's solution) 1:20 to 1:10. After the acute phase, when the lesions are no longer weeping, itching and swollen, protective ointment may be used.

PIGMENTARY DEGENERATION OF RETINA OR RETINITIS PIGMENTOSA

To the Editor:—What is the present status of treatment of retinitis pigmentosa? Is nonspecific protein therapy worthy of a trial, and, if so, what material and dosage should one employ?

Alan A. Bassett, M.D., Little Current, Ont.

ANSWER.—Retinitis pigmentosa is improperly named, for the condition is one of degeneration, not inflammation, and hence should be called primary pigmentary degeneration of the retina. The term "primary" must be included to differentiate it from clinically similar pictures that oftentimes follow certain inflammatory conditions in the retina and choroid. In view of the basically degenerative character of the disease, it is obvious that therapeutic measures of the many types that have been tried, including foreign proteins, can have but little influence on the condition. In recent years endocrine therapy seems in many cases to have retarded the progress of the degeneration, but, to quote from Duke-Elder, "The clinical course is slow, chronic and progressive but is very frequently interrupted by remissions during which visual acuity and fields improve, a happening which has too often been interpreted as being a response to some particular line of treatment." Again, the same author said "In assessment of all of them [forms of treatment] it is well to take into consideration the natural fluctuations in the progress of the disease as well as the enthusiasm of the practitioner and the credulity or the desperate hopefulness of the patient."

NOCTURNAL CRAMPS IN THE LEGS

To the Editor:—In *Queries and Minor Notes* Feb. 12, 1944, page 471, Dr. T. H. Standlee of Mirando City, Texas, inquires about nocturnal cramps in the legs. Within the last few months I have had 3 patients with this condition, and I have tried every conceivable form of medication. I always thought it was akin to tetany. All 3 of my patients have been relieved, I hope permanently. They were given alkaline catharsis as small doses every morning of sodium phosphate, and before retiring they alternately placed each foot on the opposite thigh, sitting on a chair, thus relaxing it and passively manipulating all the toes and metacarpal joints and the ankle. They did this quite vigorously. This causes a local congestion and an increase of the blood supply in this area. It also stimulates the nerve endings here. I have spoken to a number of my medical friends about it and they have had similar good results. Occasionally a patient has spasms of the calf muscles; here too, when the muscle is relaxed, deep vigorous kneading should be of value.

Siegfried Block, M.D., Brooklyn.

THIAMINE HYDROCHLORIDE FOR CRAMPS IN LEGS

To the Editor:—In the answer to the question on "Nocturnal Cramps in the Legs" in the February 12 issue I notice that no mention was made of the use of vitamin B₁ in this condition. I have become convinced that the use of sufficient amounts of this drug (10 to 30 mg. daily) will relieve the leg cramps not only in the pregnant but in the majority of other patients that have them, both old and young. However, it has to be administered parenterally in some cases to obtain proper results. Because of the unusually good results that are obtained from it, I believe that its use should be considered as almost specific. Few cases fail to respond with this treatment.

J. W. Carney, M.D., Logan, W. Va.

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FATAL CORONARY ARTERIOSCLEROSIS IN YOUNG SOLDIERS

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MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

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WASHINGTON, D. C.

Since the beginning of the present war the Army Medical Museum has received protocols and tissues from more than 100 fatal cases of coronary arterial disease in soldiers 20 to 36 years of age. The chief facts concerning 80 such cases in which deaths seemed due to uncomplicated coronary lesions form the basis of this report.

PREDISPOSING FACTORS

(a) *Racial*.—Three of the men were of Negro and 2 of American Indian ancestry. None had names usual among Jews of European stock, and few appear to have been of Jewish faith or ancestry. Most common were names of Irish or English origin, but there were also Italian, French and Slavic names. In brief, no racial tendency toward coronary sclerosis was indicated in the present series.

(b) *Constitutional Factors*.—There was a tendency to obesity. Eleven men were "very obese," 29 were "obese" and 33 were above "ideal weight for height." In summary, 73 of 80 young men who succumbed to coronary disease were over weight. Only 2 were "thin."

(c) *Tobacco*.—Histories of the use of tobacco are not recorded regularly, but it was not stated that any of these men were nonsmokers. This is not significant in view of the almost universal use of cigarets among our armed forces.

Age Distribution.—The accompanying table gives the age distribution in the present series. As the number of soldiers in each group probably falls off after the age of 25, the incidence of fatal coronary disease per thousand soldiers undoubtedly rises more rapidly than the case numbers of the table would indicate. Fatal coronary disease obviously is far more frequent at 36 than at 20. Only after the war has ended will it be possible to give the case rate for clinically recognized coronary disease, and the annual fatality rate per thousand soldiers. It should be emphasized, however, that only 6 of the 39 men whose hearts showed old areas of fibrosis had reported any complaint prior to the fatal attack; hence it is probable that the actual incidence

of coronary disease in the age group under analysis is much more frequent than is suggested by clinically recognizable and fatal cases.

Prodromes.—Fifteen soldiers commented on chest pains to their associates a few days or weeks before the final episode but did not report for sick call. Such comments probably escaped recording in many cases; in fact, pain which was experienced may not have been complained of to any one. Ten soldiers had reported chest pains at sick call; often it was trivial, but in several cases coronary disease was "ruled out" by careful study. Two of these soldiers had pain regularly related to meals and relieved by belching. In addition to the 10 soldiers with chest pain 1 reported dyspnea; careful clinical study failed, however, to disclose evidence of coronary disease. Three other patients had had palpitation; of these, auricular tachycardia was proved in 1, numerous "ectopic beats persisting during exercise" in another; the third had no demonstrable arrhythmia. Death occurred many weeks after these reports, and the 3 men had carried on full duty with no further complaint. In summary, in over one third of the group there were prodromal symptoms suggestive of heart disease.

Factors Precipitating the Final Episode.—Febrile illnesses were noted only twice. Both were mild upper respiratory infections treated with rest and adequate care and terminating four and ten days prior to the attack. Trauma to the chest was noted in only 1: a nondisabling bump incurred while playing football two months previously.

One case of sudden death, one fatal three hour seizure and one sudden death of a soldier hospitalized for a study of angina of effort occurred while these men were at stool. They had no pain when they went to the latrines. "Bearing down" with a closed glottis (Valsalva experiment) is notoriously dangerous for cardiac patients.

In 8 cases there were no data on physical activity just prior to the final attack. In 28 instances the history indicates nothing out of the routine of a day in which walking is the only sustained exercise. Marching with a pack is considered as "vigorous exercise," and it is remarkable, in view of the soldier's chances for vigorous activity on or off duty, that about 40 per cent of these men had not had such exercise within a day or so of their final cardiac break.

In 15 cases sudden death or the onset of severe pain in a fatal seizure occurred during vigorous or violent muscular effort. Twenty-six patients, or 35 per cent, had the fatal attack within one to several hours after "vigorous exercise"; 5 of these "dropped dead" and 4 died in sleep, as did 3 who had not been unusually active.

Mode of Death.—Of the 80 patients in this series 39 died suddenly, losing consciousness without complaint of any kind; 7 died in sleep and another awoke with pain and died shortly thereafter. Twenty-four soldiers had a painful seizure of a few minutes duration; 11 of these died suddenly and the rest passed quickly into shock, cyanosis or pulmonary edema.

Six patients lived for several hours, 3 others for a day or two after the onset of pain. One man manifested intractable congestive failure, with death six weeks after the onset of dyspnea. Another soldier developed a fatal hemiplegia during drill and died four days later. He had a well healed massive infarct with

who fainted while shaving, recovered, ate breakfast and then had a painful seizure, fatal within the hour. Only 10 per cent of the fatalities occurred during sleep. In 17 per cent of the series the attack began during the first two hours of the morning and before drill. The sudden change from complete rest to the effort of



Fig. 2.—A soldier aged 21 died suddenly while marching double time on the drill field. The heart was not enlarged. The intima of the root of the aorta showed atheroma, as did both coronary arteries. The abdominal aorta was not involved. The section shows an area of the left descending coronary artery. Calcification and cholesterol slits are prominent. Note the replacement of the media by fibrous tissue. Reduced from a photomicrograph with a magnification of 50 diameters.

Age Distribution in the Cases of Fatal Coronary Disease in Soldiers Aged 20 to 36

Ages in years.....	20-22	23-25	26-28	29-31	32-34	35-36*
Number of cases.....	5	9	11	14	21	20

* Note that age distribution is given in three year periods, except in the last column.

extensive mural thrombosis and had been doing full duty unaware of a lesion weeks old, which had developed into an aneurysm. One man had one day of typical pain, five days of fever and an uneventful six weeks of rest in bed. He died in bed during the eighth week, after sitting up a few hours daily for nearly a week; no pulmonary embolus or fresh thrombus was found to explain the sudden terminal collapse.

These histories indicate that while vigorous effort may precipitate the final break in young men with coronary occlusion, complete or partial, neither sedentary life nor bed rest, nor even sleep itself completely

dressing and starting a new day may possibly be a special hazard.

Pathologic Anatomy.—In 57 cases the heart weights were recorded; the average was 365 Gm., with three fourths of the weights falling between 300 and 440 Gm. The hearts of 35 control subjects (deaths from automobile accidents, same age group) averaged 339 Gm., with three fourths falling between 275 and 395 Gm. The victims of accidents were not as overnourished as those of the coronary group; the figures therefore show that the soldiers' hearts are somewhat heavier than those of the average person and also that coronary disease causes no significant hypertrophy in the hearts of young men. This is in accordance with the data of others¹ but not with those of some observers.²

Recent infarction was demonstrated in 15 cases, and fibrous scars, with or without fresh necrosis, were noted in 39. Such lesions generally increase heart weight; moreover, hypertension cannot be excluded in all the cases. Nevertheless the rarity of hypertrophy in these 80 men with inadequate coronary flow does not support the idea that an inadequate blood supply to the myocardium is a factor in inducing cardiac hypertrophy.



Fig. 1.—A soldier aged 22 dropped dead while marching in review. The heart weighed 280 Gm. and did not show any infarct or scar. The descending branch of the left coronary artery was stenosed, the circumflex branch and the right coronary were narrowed by yellow plaques. There were plaques in the anterior mitral leaflet and in the root of the aorta. The section shows a large plaque with the media largely intact and relatively acellular fibrous tissue over the "lake" of hyaline and fatty debris. Reduced from a photomicrograph with a magnification of 60 diameters.

protects the heart from a fatal outcome. The frequency with which the attack occurs in the early morning is striking. A typical instance is the man

1. Miller, H. R., and Weiss, M. M.: Disease of Coronary Arteries: Its Occurrence Without Gross Cardiac Hypertrophy. *Arch. Int. Med.* 42:74 (July) 1928. Maun, M. E.: Influence of Coronary Sclerosis, Chronic Congestive Heart Failure, and Myocardial Fibrosis on Cardiac Hypertrophy. *J. Lab. & Clin. Med.* 26:1239, 1941.
2. Katz, L. N.; Sanders, A.; Megibow, R. S., and Carlen, S.: Heart Size and Atherosclerosis in the Rabbit. *Am. J. M. Sc.* 200:731, 1940. S.; Taub, S. J., and Kupersmith, H.: Studies Concerning the Effect of Coronary Sclerosis to Heart Weight and Right and Left Ventricular Hypertrophy. *Illinois M. J.* 77:240, 1940.

The coronary lesion present in every case was arteriosclerosis. Lesions were present in more than one coronary artery in 67 cases. What was apparently the most important stenosing lesion involved the main or the descending branch of the left coronary artery in 63 cases, the right in 11, the circumflex branch of the left in 6. This left sided preponderance is well known.³ In 35 instances only 1 coronary artery was narrowed, but significant narrowing was found in 2 of the 3 large branches—left descending, left circumflex, or right—in 17 cases, and in all 3 of them in 28 others. Thrombosis was proved in 29 cases. Aortic plaques or streaks were noted in 61 cases. Significant disease of the arterioles in the viscera was found in none of these cases.

Seventy-five patients had typical lipid and hyaline coronary plaques (fig. 1). In 5 patients the plaques were richly cellular, with many fat-filled macrophages; they resemble xanthoma without giant cells (fig. 3) and are of the type sometimes thought to develop rapidly. Hemorrhages in plaques were seen in only 5 cases, in none of which was there evidence of a preexisting arteritis. In 30 of these cases calcific deposits were noted. Lesions resembling periarteritis or thromboangiitis were present neither in the heart nor elsewhere in any case in the series.

The media and the inner elastic membrane usually appeared normal under the smaller plaques, and not infrequently under very large and fatal lesions (figs. 1 and 3). This was especially the case when the plaques were cellular and avascular. The older and the well vascularized atheromas often covered a region of medial atrophy or even complete fibrous replacement of muscular elements. This was seen only at the center of the plaques, for the media was intact at the edge (fig. 2). Lymphocytic infiltration and fibrous thicken-

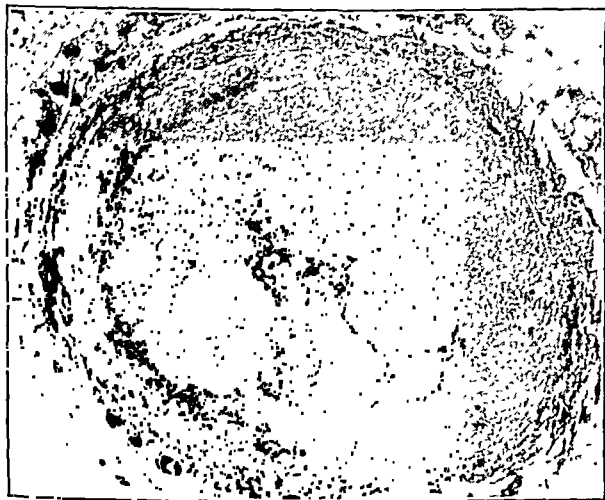


Fig. 3.—Just after supper a soldier aged 21 was seized with pain in the precordium and died suddenly. The heart weighed 415 Gm. and had a scar at the base of the left ventricle. There were small plaques at the base of the aorta, and a large plaque (shown in the section), richly cellular and containing many "foam cells," in the descending branch of the left coronary. The media was intact. Reduced from a photomicrograph with a magnification of 70 diameters.

ing of the adventitia and of other layers were seen most often in older men. In a few of the younger patients such changes were associated with calcification (fig. 2),

extensive vascularization of the plaques or medial atrophy. These facts are interpreted as indicating that the plaques precede the medial lesion.

CASE HISTORIES

Case Illustrating Absence of Symptoms with a Large Infarct.—A staff sergeant aged 24 had a complete physical examination on October 16. The pulse rate returned quickly to normal after exercise, and no abnormality was noted. He had no complaints then or later, ate well and carried out his duties, drill and off duty activities until November 6, when he had a "spell" after calisthenics, became stuporous and had right hemiplegia and a blood pressure of 135/75. On the fourth day his temperature rose to 109 F. before death.

A large mural thrombus was found in the left ventricle, and an embolus was present in the right internal carotid. The descending branch of the left coronary was thrombosed, and there was a large infarct of the anterior and septal wall of the left ventricle, which showed definite fibroblastic replacement of the necrotic tissue and thinning of the wall.

Case Illustrating Death After Exercise and Cold Drink.—An artilleryman aged 28 participated in a battle indoctrination course on the desert about May 1 in the afternoon. He seemed well up to the time he took "a cold drink" before supper. Almost immediately he had a "spell" and died after a few gasps.

There was pronounced narrowing of the descending branch of the left coronary and some narrowing of the right by arteriosclerosis but no infarct or scar in the heart.

Cases Illustrating Death During Violent Effort.—A cavalryman aged 33 never had had any physical complaints. As he finished the obstacle course, not for the first time, he said "Gee, that one got me!" and fell dead. All three main coronary branches were narrow, the descending almost closed by arteriosclerotic plaque. The left ventricle had many small silvery white scars close to the endocardium; the heart weighed 308 Gm.

While hauling ashore a large net one of a group of men became exhausted, and a staff sergeant aged 25 swam over, rescued him and dropped dead. The descending branch of the left coronary artery was "almost obliterated by an atheromatous plaque." There were no scars in the heart, which weighed 310 Gm.

An artillery man aged 32 crawled 50 yards on his abdomen on the infiltration course; he then complained of exhaustion and slight precordial pain. He refused to be carried to the dispensary $\frac{1}{4}$ mile away but had severe pain radiating from the chest to the left hand on arrival. His pulse rate was 45; he was gray but not dyspneic. He died in a few minutes. There was narrowing of all 3 main coronary branches, almost complete occlusion of the descending branch of the left; the 315 gram heart showed no scars.

Cases Illustrating Unusual Prodromal Features.—A Negro soldier aged 35 complained of attacks of "fast heart beat," weakness and "staggers." These occurred in the morning for nearly six months before he was kept under observation for twelve days in the station hospital. All studies were negative, chest x-ray examinations normal, electrocardiograms not available. The pulse ranged from 60 to 115, without arrhythmia. The discharge diagnosis was neurocirculatory asthenia. Twelve days later he dropped dead during drill. The heart was not remarkable save for almost complete closure of the descending branch of the left coronary.

A corporal aged 23 was seen in the dispensary from February 23 to March 4 for indigestion and was then hospitalized for nine days. Just after meals he had a dull ache in the upper abdomen, frequently associated with vomiting. He was flatulent, suffered from constipation, had a poor appetite and was losing weight. All tests, including gastric x-ray films and test meal, were normal. The diagnosis was neurasthenia. By March 24 he had lost 15 pounds (7 Kg.) and had the same complaints;

3. Maxwell, E. S.: Pathology of Coronary Disease, Kentucky M. J. 41: 79, 1943.

the sedimentation rate and chest x-ray film were normal. He had no difficulty with work or drill but died suddenly while dressing on April 4. The left descending branch was practically closed at its origin by an internal plaque. The muscle showed slight interstitial fibrosis. There was no lesion of the stomach, intestine or gallbladder.



Fig 4.—Section of a coronary artery with a lateral branch. In the main vessel the intima is evenly thickened throughout the entire circumference, but with no atheroma. Note by contrast the delicate intima of the branch artery. Reduced from a photomicrograph with a magnification of 435 diameters.

COMMENT

Clinical.—That arteriosclerosis of the coronary arteries occurs in young adults, or even before adolescence, is well known,⁴ as is the frequent occurrence of such lesions in young persons with familial xanthomatosis.⁵ But under the conditions of military life, with its lack of privacy and frequent access to medical examiners and physicians, it is possible to learn more about the story of fatal cases than is true in civil life. In many of these, had death occurred during or after dances, games or other strenuous civilian pursuits, there would have been a coroner's inquest, few would have been closely observed and reported and in many there might not have been an autopsy. The present report is intended only to round out the story of the clinical features of coronary disease which will eventually be told by physicians with the armed forces. At that time the facts here reported can be of value in calculating the total incidence of recognized and of fatal cases. Only 1 in 8 of the patients who died survived for an hour or more after the final episode began. Less than half of those who mentioned prodromal symptoms sought professional advice, and only 1 of the 14 whose symptoms might have remotely suggested this condition had received a correct diagnosis and been treated before the fatal attack. Of the 39 with scars in the heart muscle, only 6 had reported at sick call for symptoms which in retrospect may be regarded as cardiac. It seems safe to conclude that in this age group undiagnosed and undiagnosable organic disease due to coronary arteriosclerosis is much more frequent than is recognized.

We know the circumstances at the onset of the 64 of the 72 fatal attacks which began during the day,

and we know that 7 men died in sleep and 1 awoke with pain at the onset of his fatal seizure. Using these data, and assuming that soldiers in training or noncombatant duty sleep eight hours and have two hours of vigorous activity and fourteen hours of activity like that of many civilians, we have calculated the risk of onset of fatal seizures at various levels of activity during the "average day" of such a group of young soldiers. Taking 1 onset per hour during sleep as the base line, since 8 actually occurred, the incidence calculated is 10 per hour during vigorous effort, 7 per hour during the first two hours after awakening and 3 per hour during the rest of the day's activity at the "nonvigorous" level. The average for the fourteen hours of normal activity is 4 per hour, as compared with 1 onset per hour during sleep. It must be emphasized that this refers to activity when the final episode begins and does not shed light on any possible relationship of activity or effort to formation of sclerotic plaques or the occlusion of the arteries by a thrombus or spasm. Presumably activity does increase the risk of hemorrhage into the plaques.⁶ It is obvious that in many of these cases occlusion, infarction or severe scarring of the heart was present days before the fatal disorder was dramatically revealed. We are here concerned with the effect of sleep and of various levels of activity in precipitating the final episode, and there can be little doubt that, while vigorous effort and even the starting of a new day's activity are far more hazardous than sleep, young men with coronary disease run only a moderate risk of having their disorder become manifest during ordinary activities of camp life.

Pathologic.—Death without scar or infarction and death with only a single occlusive lesion is perhaps more frequent in young men than in older ones dying of this disease. While all of the classic pathologic features of arteriosclerosis are seen in even the youngest fatal

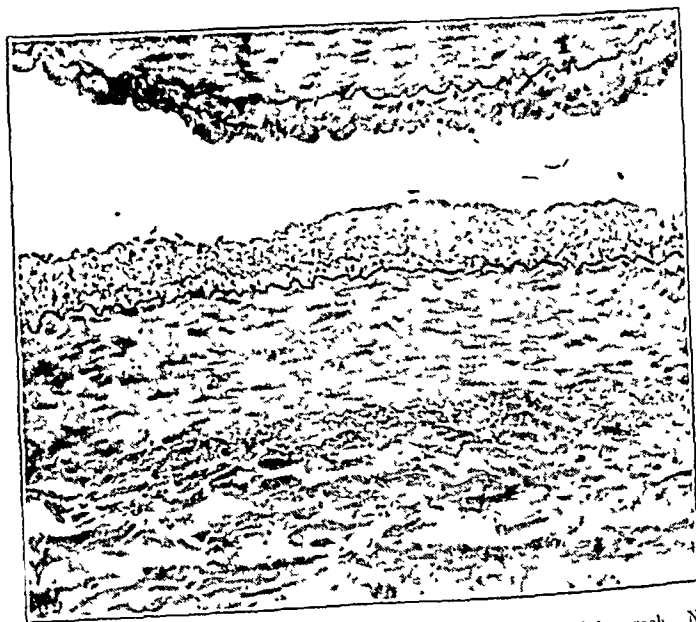


Fig 5.—A soldier aged 19 was killed in an automobile crash. No lesion of the heart or coronary arteries was found. The section shows opposite sides of a coronary artery (the lumen of which has been reduced). The thickness of the intima is minimal for vessels of the age group under discussion. This normal artery is included as a "control." Reduced from a photomicrograph with a magnification of 150 diameters.

case, solid cellular xanthomatous plaques are somewhat more frequent in the younger group. This study adds nothing to our knowledge of the etiology of atheromas

4 Master, A. M.; Dock, S., and Jaffe, H. L.: Age, Sex and Hypertension in Myocardial Infarction Due to Coronary Occlusion, *Arch. Int. Med.* **61**:767 (Oct.) 1939. Glendy, R. E., Levine, S. A., and White, P. D.: Coronary Disease in Youth, *J. A. M. A.* **109**:1775 (Nov. 27) 1937.

5 Langleberg, H., and Newman, B. A.: Xanthomatosis, A Cause of Coronary Artery Disease in Young Adults, *J. A. M. A.* **122**:1167 (Aug. 21) 1943. Muller, C.: Xanthomata, Hypercholesterolemia, Angina Pectoris, *Acta med. Scandinav.* 1938, supp. 89, p. 75.

6 Nelson, M. G.: Intimal Coronary Artery Hemorrhage as a Factor in the Causation of Coronary Occlusion, *J. Path. & Bact.* **53**:105, 1941.

or the predilection of these lesions for the epicardial branches of the coronary artery. Involvement of the thoracic aorta with absence of plaques in the abdominal aorta seems more frequent in the young. Colonel Lucké⁷ noted this in autopsies on soldiers in 1918.

The coronary vessels which were not involved in any atheromatous process often had remarkably thick intimal layers. This was striking when epicardial branches of the coronary arteries of men killed in accidents (fig. 5) were compared with some of the normal arteries (fig. 4) of those who died of coronary occlusion, or those whose coronary arteriosclerosis was merely an incidental finding. While it is well known that the epicardial coronary arteries in infants, children and adults have intima far thicker than any other arteries of the same size in the body,⁸ the individual variation of this tissue, and the relation of such variations to atheromatosis, is not known. Leary⁹ regarded the thick intima as evidence of local stress in the artery. The succulent tissue found in many coronary arteries seems to offer a better soil for the deposition of plasma lipids¹⁰ than does the extremely delicate intima of the splanchnic, carotid and other medium sized or large sized arteries. That the lipids in the atheroma come from the plasma seems to have been proved beyond any doubt.¹¹

The medial changes seem to us to be secondary and frequently related to vascularization of the plaque as well as to atrophy from disuse. A lymphocytic response is more evident in those over 30 and is presumably a nonspecific reaction similar to that in arteriosclerotic kidneys or in the breasts, thyroids and adrenals of older subjects.

SUMMARY

1. An analysis of the clinical and pathologic features of 80 fatal cases of coronary disease in soldiers aged from 20 to 36 revealed that the disease occurred in men of various racial and national origins, showing no predilection for any particular stock.

2. The most striking presumable predisposing factor was overweight, which was present in 91 per cent of the cases.

3. Vigorous effort, and the activities of early morning chores, brought on the fatal attacks in over 50 per cent of the cases.

4. Sudden death, or the onset of the fatal attack, occurred during sleep in 10 per cent of the cases.

5. The basis of coronary occlusion was found to be arteriosclerosis in all cases. Arteriosclerotic plaques in more than one coronary branch were found to be present in 84 per cent. Definite thrombosis was proved in 36 per cent of the series.

6. Myocardial scars, indicative of previous insults, were observed in 59 per cent of the cases. Recent myocardial infarction was noted in 19 per cent.

7. Cardiac hypertrophy of significant degree did not occur in this series.

7. Lucké, B.: Personal communication to the authors.

8. Spalteholz, W., and Hochrein, M.: Untersuchungen am Koronar-system: Die anatomische und funktionelle Beschaffenheit der Koronar-arterienwand, Arch. f. exper. Path. u. Pharmacol. **163**: 333, 1932.

9. Leary, T.: The Pathology of Coronary Sclerosis, Am. Heart J. **10**: 328, 1935.

10. Leary, T.: The Genesis of Atherosclerosis, Arch. Path. **32**: 507 (Oct.) 1941.

11. Hirsch, E. F., and Weinhouse, S.: The Role of the Lipids in Atherosclerosis, Physiol. Rev. **23**: 185, 1943.

THE USE OF NEOSTIGMINE IN THE TREATMENT OF MUSCLE SPASM

IN RHEUMATOID ARTHRITIS AND ASSOCIATED CONDITIONS

PRELIMINARY REPORT

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AND

ABRAHAM COHEN, M.D.

PHILADELPHIA

Rheumatoid arthritis shows certain signs which bear close resemblance to those of anterior poliomyelitis. Outstanding among these are muscle spasm and atrophy. Such muscle spasm persists even though the arthritic process has become quiescent, and results in limitation of motion, deformities, weakness, fatigue and pain on pressure or stretching of the affected part.

In poliomyelitis the so-called muscle spasm has been treated with apparent success by the use of hot fomentations in accord with the Kenny technic.¹ In subacute and chronic poliomyelitis, neostigmine (prostigmine) has been used with encouraging results by Kabat and Knapp.² Our purpose in this study was to apply the principles set forth by the latter investigators to the muscle spasm accompanying rheumatoid arthritis and similarly related conditions.

Rheumatoid arthritis is generally thought of as a condition which affects primarily the joints, resulting in a destructive lesion affecting the motion of those joints. However, we are of the opinion that, even though the disease process in the joint has become quiescent, there remains a spastic state of the muscles surrounding that joint. This spasm involves both flexor and extensor muscles and is manifested clinically in various types of painful deformities. Obviously, if this hypothesis is true the relief of such spasm would result in much increased comfort of the patient and a consequent diminution or even complete prevention of deformities.

We have employed neostigmine in relieving such spasm in accordance with the concept promulgated by Kabat and Knapp.² The latter believe that neostigmine has a direct action on the spinal cord which may be depressing in nature in some instances and stimulating in others, depending on the groups of neurons which are acted on. In cases of rheumatoid arthritis we believe the action is probably depressive, as the muscle spasm is usually promptly alleviated.

CLINICAL MATERIAL

The entire preliminary group consisted of 19 patients, all of whom had rheumatoid arthritis or similarly related conditions. Each patient had been observed for several months prior to neostigmine therapy so as to gain an accurate impression of their clinical status and of any progress which they might be making. Patients selected exhibited a maximum of deformity and definite loss of function and limitation of motion but a minimum of active joint involvement. Many had received previous courses of gold salt therapy.

From the Arthritis Clinics of the Philadelphia General and Jefferson hospitals.

The prostigmine methylsulfate and prostigmine bromide used in this study were supplied by Hoffmann-La Roche, Inc., Nutley, N. J.

1. Pohl, J. F., and Kenny, E.: The Kenny Concept of Infantile Paralysis, St. Paul, Bruce Publishing Company, 1943.

2. Kabat, H., and Knapp, M. D.: The Use of Prostigmine in the Treatment of Poliomyelitis, J. A. M. A. **122**: 969 (Aug. 7) 1943.

TECHNIC

Before neostigmine treatment was initiated, each patient was given a careful physical examination with especial reference to the amount and degree of deformities of various joints. Actual angle measurements were usually made and recorded before and during the period of treatment. An estimate of the ability to perform certain common movements, such as arising from a recumbent position, sitting, turning, washing the face and feeding, was made in each case.

Treatment was generally started by the subcutaneous administration of 1 cc. of neostigmine methylsulfate 1:2,000 (0.5 mg.) and 0.6 mg. of atropine sulfate given every other day. Seven and five-tenths to 45 mg. of neostigmine bromide, usually with 0.6 to 1.2 cc. of tincture of belladonna, was given daily in most cases. It is to be noted that the only purpose of the atropine and/or belladonna was to forestall any possible undesired effects of neostigmine on the myoneural junctions of the parasympathetic nervous system. Careful observations were made on the immediate effect of the neostigmine as well as on the general progress of the patient.

REPORT OF CASES

CASE 1.—E. G., a white woman aged 62, was observed to have rheumatoid arthritis involving the right hip joint, legs, feet and hands. She was given 1 cc. of neostigmine methylsulfate 1:2,000 and 0.6 mg. of atropine sulfate subcutaneously and within a few minutes slightly easier movements of the fingers were observed. She was able to lift her pocket-book with her right hand, a previously impossible act. It was decided to give her a maintenance dose of one 15 mg. neostigmine bromide tablet orally three times a day. When seen forty-eight hours later the patient was able to dig the fingernails into the palms and make a fist. Arising from a recumbent position in bed was now performed without aid. Whereas before neostigmine therapy she could but splash water in her face to wash, she was now able to perform this act with comparative ease.

One week after initiation of therapy she reported that despite 45 mg. of neostigmine bromide daily she was beginning to "get stiff again." Two cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate was accordingly given subcutaneously, the effect of which was not manifest for about four to five hours and lasted forty-eight hours. At this time the parenteral dose was repeated with prompt alleviation of symptoms. Therefore, for the next five weeks 2 cc. of neostigmine methylsulfate with 0.6 mg. of atropine sulfate was given every second day in addition to 15 mg. of neostigmine bromide three times daily by mouth.

At present the patient has received neostigmine therapy for approximately ten weeks. Improvement is slow but continuous, and we intend to continue with this treatment until such time as no improvement is manifest, following which a maintenance dose of neostigmine will be established.

CASE 2.—O. K., a Negro woman aged 63, had been bedridden for one year because of rheumatoid arthritis and had been hospitalized for about six months prior to the institution of neostigmine therapy. The patient had a complicating diabetes mellitus which was considered irrelevant.

When first seen she was confined to her bed, was unable to feed or otherwise care for herself and was for all practical purposes a complete invalid. The arthritic lesions included a pronounced flexion deformity of the knees and feet, a rigid spine and "claw hands." Motion in almost any joint was limited and very painful. Goniometric measurement of the right knee showed 90 degrees flexion in the immobile position, with shortened hamstring tendons. The left knee was flexed to 110 degrees with a similar status of the hamstring muscle group. In general, the patient assumed a modified fixed fetal position. Previous therapy consisted in salicylates and gold salts but was of no value.

A test dose of 2 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate was given subcutaneously.

Within fifteen minutes the right knee extended to 130 degrees and the patient was able to cross the right knee over the left. The improvement was maintained for five days without additional therapy. Subsequently a similar dose of neostigmine methylsulfate and atropine was given every two days. One month after initiation of this treatment the medication was changed to two orally administered neostigmine bromide tablets with 0.6 cc. of tincture of belladonna three times daily.

As the therapy was continued, the patient was observed to have more and more improvement. She was able to open and close her hands, get out of bed and into a wheelchair without assistance, wash her hands and face and comb her hair, and could place her hands and arms in back of her head. After three months of neostigmine therapy the limit of improvement was reached, a state which was occasioned by the partial bony ankylosis of many joints. It is of particular interest that all previous therapy had been given to no avail.

CASE 3.—R. B., a white man aged 42, complained of pain in the right shoulder of three weeks' duration. The pain radiated to the right lateral aspect of the neck. Abduction of the arm or rotation of the head was impossible without excruciating pain.

Previous therapy consisted of baking and massage, procaine infiltration about the cervical vertebrae, removal of several diseased teeth and analgesics. Relief was temporary with the procaine injections; otherwise the patient was in constant pain.

Examination revealed several points of tenderness in the right scapular region. Right shoulder movement was limited in all directions. A roentgenogram was reported as revealing "hypertrophic arthritis involving all the cervical vertebrae as evidenced by thickening and sclerosis of articulating surfaces, narrowing of the intervertebral spaces and foramina. There are some arthritic changes in the right acromioclavicular articulation."

Treatment was instituted by administering 2 cc. of neostigmine methylsulfate 1:2,000 with 0.4 mg. of atropine sulfate subcutaneously every four to six days. In addition, 7.5 mg. of neostigmine bromide and 0.3 cc. of tincture of belladonna were given by mouth three times daily. Relief was experienced within a few minutes after the initial injection of neostigmine. Voluntary movement was definitely greater in the cervical spine, and pain was but slight. The patient has now been receiving neostigmine for several months, a procedure which has kept him relatively free from pain.

CASE 4.—A. B., a white man aged 52, gave a history of the sudden onset of sharp, lancinating pain in the lumbar area while arising from bed. Relief in some degree was obtained by sitting or lying down. After he had walked a few steps the pain lessened and was reduced to a soreness. There was no radiation to any other area.

The patient was well built and well nourished. The lumbar muscles exhibited some rigidity bilaterally. Flexion of the lumbar spine was limited to a 150 degree angle, and there was some limitation of lateral motion.

Ethyl chloride spray to the lumbar area gave some measure of relief by partially relaxing the muscle spasm. The relief persisted for but two hours, following which the pain was as severe as at the onset. Accordingly 2 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate was given subcutaneously. Within fifteen minutes the patient stated that he was greatly improved. Flexion of the trunk was now possible to a 90 degree angle, and there was no evident limitation of lateral motion. The lumbar muscles seemed "softer" on palpation.

Two days later there were beginning signs of a return of the lumbar rigidity. The trunk could be flexed only to a 110 degree angle, and accordingly the neostigmine-atropine injection was repeated, with subsequent relief. Following this second injection there was no recurrence of symptoms, and the patient was discharged.

CASE 5.—A white man aged 32 stated that, while performing his duties as a fireman, he fell down a flight of stairs, pinning his right leg under his left and injuring his right knee, which became swollen and painful.

Physical examination was irrelevant save for the local condition. The right knee area was edematous and the leg flexed

to a 110 degree angle. Any attempt at manipulation evoked further pain. The hamstring muscles were hard; evidence of muscle spasm. Roentgenograms revealed no abnormality.

The usual dose of 2 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate was given subcutaneously. Five minutes later the patient was able to extend the right leg almost completely without discomfort. The effects persisted for almost two days, after which there was a gradual return of hamstring spasticity. Accordingly the neostigmine-atropine injection was continued every other day for another week, while other treatment relieved the bony injury.

CASE 6.—A white female aged 35 stated that she had had rheumatoid arthritis for the past nine months. She had been confined to bed for the last four months, save for bathroom privileges, during which time she was subjected to the usual measures designed for symptomatic relief—salicylates, alkalinization and opiates. All her teeth had been extracted, since it was believed that they were a focus of infection.

Physical examination revealed a more or less generalized stiffness of the joints throughout the body. The patient was unable to move her arms, forearms, legs, feet and toes. Assistance was required for walking, feeding, dressing and other movements.

Therapy consisted of neostigmine methylsulfate 1:2,000 twice daily for three days, the dose ranging from 0.5 to 2 cc., depending on the degree of stiffness present. Atropine sulfate 0.4 mg. was given with each dose of neostigmine methylsulfate. Concurrently the patient received capsules containing codeine sulfate $\frac{1}{2}$ grain (0.032 Gm.), sodium salicylate 5 grains (0.32 Gm.) and acetylsalicylic acid 5 grains every three to four hours. On the ninth and eleventh days a sterile hypodermic injection was given to rule out any psychic factor. No relief followed these.

Thereafter daily injections of 2 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate were given for eleven days. The results were remarkable in that there was a considerable degree of relaxation of spasm of the muscles surrounding the affected joints. By the end of the third day the patient was able to arise from her bed without assistance, and on the sixth day she was able to use a broom in a sweeping motion.

Following about two weeks of neostigmine treatment all therapy was discontinued for sixteen days, following which there was a relapse, which was relieved by additional neostigmine-atropine injections.

CASE 7.—O. A., a white man aged 51, complained of pain in the neck and back of six years' duration. The patient, who was round shouldered, was unable to rotate his neck or bend his trunk anteriorly. In order to turn his head he was forced to rotate his entire body.

Therapy consisted of 1 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate subcutaneously every two to three days, in addition to 30 mg. of neostigmine bromide with 0.6 cc. of tincture of belladonna by mouth three times daily. There was no objective improvement after one month, although the patient claimed he felt somewhat improved, especially in dry weather. This case must be considered a therapeutic failure.

CASE 8.—J. K., a policeman aged 38, gave a history of having had a sudden onset of severe pain in the left shoulder three months before. A diagnosis of acute bursitis was made, and despite symptomatic treatment there was no relief, the patient being unable to raise his arm above shoulder level.

The patient was well developed and well nourished, ambulatory and in no apparent discomfort. Although the left arm could be abducted beyond 90 degrees to 110 degrees, this passive movement was accompanied by intense pain and evidence of muscle spasm.

Therapy consisted in 2 cc. of neostigmine methylsulfate 1:2,000 with 0.6 mg. of atropine sulfate subcutaneously. Eight minutes later the patient was able on his own accord to abduct his arm to a 180 degree angle with slight difficulty but with no pain. The neostigmine-atropine injection was repeated every third day for three doses. After that an injection was given each week, with complete recovery in six weeks.

COMMENT AND CONCLUSIONS

We believe that the medical profession has heretofore overlooked a very important symptom of rheumatoid arthritis, namely muscle spasm. While certain authors have previously called attention to this phenomenon, it has been generally neglected and certainly no especial therapy has been directed against it. Since it is now conceded that our present therapy for the joint lesions is at best inadequate, it becomes especially important to treat the accompanying muscle spasm, which we are convinced is one of the primary sources of the severe pain experienced by sufferers from this disease. Certainly if we cannot cure the underlying condition we should do our utmost to make the patient comfortable.

In our experience neostigmine is a far more efficacious remedy for relieving such spasm than any other medication which has been previously employed. Furthermore, we are of the opinion that neostigmine acts in a more physiologic manner than the analgesics, which do no more than depress the pain centers in the central nervous system and leave the underlying disturbed physiologic function unchanged. Although it is not known definitely just how neostigmine exerts its beneficial action, we do know that it is in all probability not directly on the myoneural junction. Were the latter the case no benefit would ensue, for atropine is known to counteract this action. Therefore neostigmine here probably acts directly on the various units of the central nervous system, perhaps in accord with the findings exemplified by Kabat and Knapp.²

Even though we are not certain of the manner in which neostigmine acts to relieve the muscle spasm and thereby the pain in cases of rheumatoid arthritis and allied disorders, we firmly advocate the extension of its use. In general, we suggest that from 1 to 2 cc. of neostigmine methylsulfate 1:2,000 with suitable doses of atropine to prevent undesired side effects (found in a certain percentage of cases) be given subcutaneously three or four times weekly. Although not used in all of our earlier cases, we advocate that from 15 to 30 mg. of neostigmine bromide be given by mouth three times daily in addition to the parenteral dose.

Of the 19 cases in our preliminary series, 8 of which are reported here in detail, a total of 13 responded favorably. In the remaining 6 cases there was either slight or no relief from neostigmine. Space does not permit us to describe the other 11 cases, but we have chosen those which we believe are most representative.

SUMMARY

1. Neostigmine has been used in treating 19 cases of rheumatoid arthritis and similarly related conditions. Thirteen cases gave a favorable response.

2. Neostigmine is believed to cause a relaxation of muscle spasm, even though it has persisted for many years. The drug has no demonstrable effect on the pain produced by the joint lesion. Active as well as passive motion in the affected joints is more easily carried out with less pain.

3. The effect of neostigmine given subcutaneously is rapid (within three to fifteen minutes after administration) and may persist for several days.

4. We believe that neostigmine bromide orally should be administered concurrently so as to obtain a more prolonged effect during the interim between injections.

5. It is to be hoped that this report on the neostigmine treatment of spasm associated with rheumatoid arthritis will encourage clinicians to study the problem further. Meantime we advocate the experimental use of the drug in all cases similar to those herein described.

AN UNUSUAL MODE OF ACTION OF
DIGITALIS IN AURICULAR
FIBRILLATIONE. R. MOVITT, M.D.
SAN FRANCISCO

In the practice of medicine there are few therapeutic triumphs that equal the spectacular results achieved through digitalization of a patient in congestive heart failure with auricular fibrillation. In a few days the gloom of the sickbed is dispersed and a new lease on life granted. To the great satisfaction of the patient and his distraught relatives, with no lesser satisfaction to the physician himself, the picture of despair is superseded by that of new hope. A sufferer who has been spending night after night propped up in a chair panting for breath and utterly exhausted by the never ending struggle for air can now breathe without effort. He need no longer look covetously at his bed, knowing that there he can find no rest. On the contrary, in bed he can now repose with ease and comfort. Every ounce of remaining strength need no longer be spent for the sole purpose of labored breathing. And all this is accomplished through the judicious use of a truly miraculous drug, digitalis.

For the present, little does it matter that the cure, in the ordinary sense of the word, is not attained, and the inevitable doom is only postponed. Also little does it matter that the ominous cycle of delirium cordis is not broken, at least in the auricles; for one may acquiesce in the security of well founded knowledge that the vicious forces are chained in the quarters where they can do little harm; that an insurmountable barrier is erected between auricles and ventricles, so that the untamed forces cannot break loose, invade the latter chambers and corrupt the rehabilitated circulation.

In auricular fibrillation, then, digitalis slows the ventricular rate, while fibrillation in the auricles remains unaffected. Although this is a well established and widely known fact, there is, however, no unanimity of opinion as to the exact mechanism responsible for this slowing. There are some who believe the effect to be due to direct action of the drug on the decompensated myocardium—digitalis enhances the force of muscular contraction, thereby increasing the refractory period of the muscle fibers and thus leading to decrease in their excitability to the auricular impulses. In addition, with the improvement in the state of circulation, and consequently in the coronary flow, the partial anoxemia of the heart muscle is relieved and its irritability thus reduced—the ventricles become less responsive to the stream of stimuli reaching them through the junctional tissue from the auricles. This view is in accord with the contention of some clinicians that the tachycardia of auricular fibrillation in patients with heart failure secondary to intrinsic cardiac pathologic changes is the result of the failure itself. But there are others who believe that the ventricular slowing results from the functional block produced by digitalis. Here again the opinion is divided as to the manner in which the block is produced. Two possibilities are known to exist:

1. Although the conducting fibers of the bundle of His constitute a specialized type of myocardial tissue, they share with the latter the cardiotonic effect of digitalis. This effect fundamentally consists in strengthening the muscular contraction with the concomitant increase in refractory period and the corresponding decrease in the rate of conduction. Thus the block may be produced by the drug through the direct action on the conducting tissue. This explanation, promulgated by Cushny, is shared perhaps by the majority of physiologists, pharmacologists and clinicians. 2. The block may be of vagal origin entirely (Mackenzie). Porter¹ contends that the failure to demonstrate the vagal effect by other workers was due to the employment of inadequate doses of atropine used in the attempts to paralyze the vagus endings and thus effect the "vagal release." By administering large doses of atropine intravenously ($\frac{1}{2}$ grain, or 0.0025 Gm.) in cases of ventricular slowing under digitalis therapy he succeeded in reproducing promptly the rapid ventricular rate of the predigitalization period, thus demonstrating to his satisfaction that the original slowing of the ventricles was caused by the action of the drug on the conducting system via the vagus. On the other hand, Gold and his associates² have succeeded in showing that, while the slowing produced by small doses of digitalis was apparently due to vagal stimulation with adequate doses of atropine increasing the heart rate, after full doses of digitalis atropine was found to be no longer effective in increasing the ventricular rate, the ventricular slowing being apparently due to extravagal action of digitalis.

It is not my purpose in this article to dwell at great length on the controversial subject of digitalis-induced slowing of the ventricular rate in cases of auricular fibrillation. It is quite likely that both vagal and extravagal influences are operative and mutually contributive toward the end result and that the three points of view mentioned are not antagonistic or mutually exclusive but rather supplement one another. Whatever may be the mechanism of digitalis-induced ventricular slowing in auricular fibrillation, the fact remains that as a generally accepted postulate the drug does not abolish the fibrillation itself; the change produced is in regard to the heart rate but not the rhythm. Goodman and Gillman³ give the following explanation for this mode of action of digitalis: "The auricular rate may increase or decrease but is usually speeded both by the muscular and vagal effects of digitalis. Both digitalis and quinidine increase the refractory period and slow the conduction in the auricular muscle but accomplish this by entirely different means. It may be asked, legitimately, therefore, why digitalis does not stop auricular fibrillation. The answer must lie in the fact that the glycoside does not sufficiently lengthen the refractory period of auricular muscle to interrupt the circus movement. Such an action of digitalis can arise only from an increase in the force of auricular contraction. Digitalis may not be able to accomplish this in a dilated fibrillating auricle. Furthermore, large doses increase muscular irritability and thus shorten the refractory phase. Likewise vagal stimulation caused by the drug also tends to shorten

1. Porter, E.: Therapeutic Use of Drugs of Digitalis Group, *Quart. J. Med.* 2:33 (Jan.) 1933.

2. Gold, H.; Kwit, N. T.; Otto, K., and Fox, T.: On the Vagal and Extravagal Factors in Cardiac Slowing by Digitalis in Patients with Auricular Fibrillation, *J. Clin. Investigation* 18:429 (July) 1939.

3. Goodman, L., and Gillman, A.: *The Pharmacological Basis of Therapeutics*, New York, The Macmillan Company, 1941, p. 532.

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the refractory period. These combined effects fix and perpetuate, if not actually accelerate, the rate of the auricular fibrillation."

In the standard textbooks of medicine, therapeutics or pharmacology there is no mention made of the possibility of digitalis effecting the change in the rhythm itself, i. e., causing in some patients with auricular fibrillation reversal to normal sinus mechanism. Luten⁴ states that whether or not the drug may at times terminate an attack is open to question. He adds "The cessation of the attack, if it occurs, is rare." However, I have encountered 2 cases of auricular fibrillation, with cessation of the arrhythmia in both while on digitalis therapy. On search of literature I have found one other report⁵ with somewhat similar observation.

REPORT OF CASES

CASE 1.—C. B. J., a white man aged 34, American, a truck driver, was admitted to the hospital on July 2, 1943 for treatment of aphasia and loss of function in the right arm and leg of one week's duration. The parents stated that the patient had chorea at the age of 8 and that in the course of the last couple of years he had complained of some exertional dyspnea.

Physical examination revealed that the patient was well developed and well nourished. He had motor aphasia and right-sided hemiplegia. There was no dyspnea, cyanosis or edema present. The lungs were normal on palpation, percussion and auscultation. The heart borders were within normal limits on percussion. The pulmonic second sound was somewhat louder than the aortic second sound. The first sound at the apex was accentuated, and a low-pitched diastolic rumble, localized to the region of the apex, could be heard. The rhythm was regular with a rate of 60. The blood pressure was 120 systolic, 50 diastolic.

The urinalysis did not reveal anything abnormal. The red blood cell count was 4,650,000, hemoglobin 14.5 Gm., platelets 370,000 and white blood cell count 10,200, with 71 per cent polymorphonuclears. The blood Wassermann reaction was negative. The x-ray examination of the chest demonstrated some cardiac enlargement, with the greatest transverse diameter of 16.3 cm. within the rib cage of 32 cm. The left border presented a straight line from the aortic knob to the apex, with some prominence over the left auricular region.

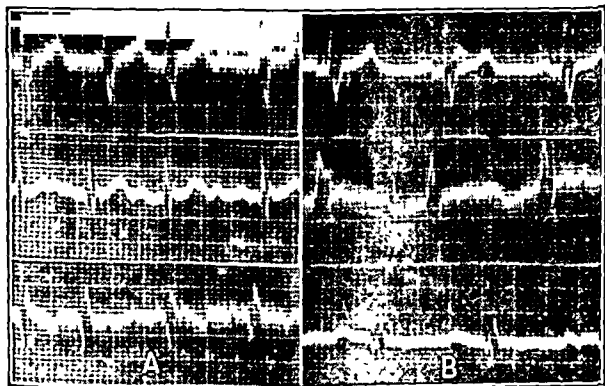


Fig. 1 (case 1).—a, before and b, after digitalization.

It was thought that the neurologic findings were on an embolic basis, secondary to rheumatic heart disease with mitral stenosis. However, and in spite of negative serologic tests on the blood, it was decided to rule out the possibility of

cerebrovascular syphilis as an etiologic factor of the patient's neurologic disability. A spinal puncture was done, but the serologic test on the spinal fluid also gave negative results.

On August 20 it was found on auscultation of the heart that there was now present a totally irregular rhythm with a rate of 120. The electrocardiogram demonstrated an auricular fibril-

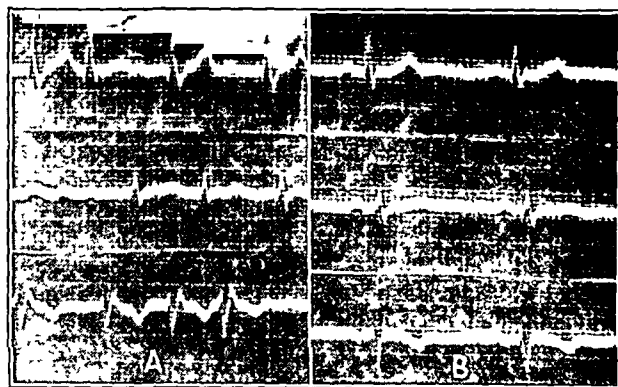


Fig. 2 (case 2).—a, before and b, after digitalization.

lation (fig. 1 a). The patient was started on digitalis. On August 25, after he had had a total of 27 grains (1.65 Gm.) of digitalis, the rhythm reverted back to sinus mechanism (fig. 1 b). The maintenance dose was 1½ grains (0.1 Gm.) and the rhythm was still regular on August 31, when the patient left the hospital.

CASE 2.—R. F., a white man aged 56, American, a hospital attendant, was admitted to the hospital on Aug. 27, 1943 with complaints of nervousness, loss of weight, slight exertional dyspnea, palpitations and a feeling of fullness in the neck of several weeks' duration. He had diphtheria at 10 and mumps at 30 years of age. There was no history of any rheumatic infection in the past.

On physical examination the patient was seen to be well developed and rather slender; he did not appear to be in any acute distress. There was no exophthalmos or lid lag. The thyroid was symmetrically enlarged; no bruit could be heard over it. The lungs were clear. The heart was within normal limits as to size on percussion. The tones were of only fair quality, somewhat distant and totally irregular, with a rate of 122. The aortic second sound and the pulmonic second sound were equal. There was a faint systolic murmur at the apex. No diastolic murmurs could be heard. The radial pulses were equal and totally irregular, with a pulse deficit of about 10. The blood pressure was 145/65. The liver could not be palpated. There was no dependent edema noted.

The urinalysis showed the presence of a trace of albumin and 1 plus white blood cells. The red blood count was 4.7 million and the white blood cell count was 7,400. The blood Wassermann reaction was negative. The basal metabolic rate was plus 7 and plus 11. Circulation time with decholin was 21 seconds. The x-ray examination of the chest revealed the greatest transverse diameter of the heart to be 14.7 cm. within a rib cage of 30.5 cm. The electrocardiogram demonstrated auricular fibrillation (fig. 2 a).

In spite of a palpable thyroid it was thought that his auricular fibrillation was not on a thyrotoxic basis. The history, the clinical appearance of the patient, the circulation time and the basal metabolic determination were all not those to be expected in a case of thyrotoxicosis. On September 1 the patient was started on digitalis. On the 6th, after the administration of a total of 24 grains (1.6 Gm.) of digitalis, the heart rate was found to be regular, and the electrocardiogram showed a reversal to sinus rhythm (fig. 2 b). The rhythm was still regular at the time of discharge of the patient from the hospital on October 2, with the patient continuing on a maintenance dose of digitalis.

4. Luten, D.: The Clinical Use of Digitalis, Springfield, Ill., Charles C Thomas, Publisher, 1936, p. 120.

5. Schwartz, S.: The effect of Digitalis on Premature Auricular Contractions Associated with Attacks of Paroxysmal Auricular Fibrillation: The Use of the Drug in the Treatment and Prevention of Certain Forms of These Arrhythmias, *Am. Heart J.* 6:458 (April) 1931.

COMMENT

The first patient had mitral stenosis. The condition of the second patient was not definitely diagnosed. Thyrotoxicosis was excluded on clinical grounds. He might have had rheumatic heart disease, even in the absence of a rheumatic history or any diastolic murmurs; also the possibility of degenerative heart disease should have been entertained. Or this patient might well have belonged to that group of individuals with paroxysmal auricular fibrillation in whom heart disease cannot be demonstrated either *intra vitam* or post mortem.

The time of onset of the first patient's auricular fibrillation was known, as it developed while he was under observation in the hospital. The arrhythmia terminated on the sixth day after the administration of a total of 27 grains (1.75 Gm.) of digitalis. The duration of the second patient's arrhythmia could not be ascertained. From the history it might be surmised that it was probably present for several weeks prior to his entry to the hospital. The return to normal sinus rhythm took place also on the sixth day after the beginning of treatment and after the administration of a total of 24 grains (1.55 Gm.) of the drug.

Auricular fibrillation is arbitrarily classified by Friedlander and Levine⁶ as either paroxysmal or "permanent," depending on whether it lasts from a few hours to a week or longer. They feel that an attack lasting longer than seven days should be classified as "permanent" because "it was assumed that any attack lasting more than a week would not be likely to cease spontaneously." Paroxysms are well known to terminate spontaneously only too frequently. Even in cases of arrhythmia lasting a few months or a year the spontaneous reversal to normal sinus mechanism has been observed. A case of spontaneous cessation of auricular fibrillation of twenty-two months' duration was reported by Burch.⁷ It is difficult, therefore, if not impossible, to be able to state definitely whether the termination of an attack in any patient with auricular fibrillation treated with digitalis is directly attributable to the drug or is rather spontaneous. However, it will be noted in both cases here reported that the return to normal sinus mechanism took place only after the administration of what could be considered as an approximation to a full digitalization dose. Whether in each case it was merely a coincidence or rather a cause and effect relationship remains highly speculative. It may be said that the latter would appear to be more probable than consecutively repeated coincidental relationships.

A reference has already been made to one other report in the literature with observations on this unusual mode of action of digitalis. Seven patients observed by Schwartz⁵ from Montefiore Hospital, New York, with organic heart disease and signs of congestive failure, had been subject to frequent attacks of auricular fibrillation. These attacks were invariably preceded for several days by auricular extrasystoles. All patients showed restoration to sinus mechanism after the administration of single large doses of digitalis within a short time after the auricular fibrillation was discovered. For

each patient "it was possible to show a direct relationship between the administration of a single large dose of digitalis and the disappearance of auricular fibrillation, with restoration of normal sinus rhythm following the use of the drug." Strangely enough, when the patients were digitalized slowly, receiving 3 cc. of the tincture daily for five to seven days, although ventricular slowing resulted the rhythm remained unchanged. Attacks of auricular fibrillation could be prevented by digitalization during the period of sinus rhythm or auricular extrasystoles, the latter arrhythmia being invariably followed by fibrillation in nondigitalized patients. These were thought by Schwartz "to form a distinct group among patients with heart disease because of the unusual response to variable doses of digitalis in the presence of auricular premature beats and auricular fibrillation."

The observations on the 2 cases reported here differ in several respects from those in the series described by Schwartz: 1. In the cases here presented there was no evidence of congestive heart failure. 2. The period of auricular premature beats immediately, and invariably, preceding the onset of fibrillation was not demonstrated. 3. Restoration to normal rhythm took place following a relatively slow method of digitalization, taking six days in each instance, a form of therapy which in Schwartz's cases was not productive of the same results, as in his cases cessation of auricular fibrillation ensued only on the exhibition of single large doses of the drug.

I have no explanation to offer for this unusual mode of action of digitalis in auricular fibrillation. The action of the drug in the auricles is complex and not too well understood.

SUMMARY

On administration of digitalis to patients with auricular fibrillation and rapid heart rate the objective sought is the slowing of the ventricular rate. The desired effect is usually easily accomplished in the presence of perpetuation of the arrhythmia itself.

In 2 cases of auricular fibrillation observed in the course of digitalis therapy, not only did the slowing of the ventricular rate occur, but also a reversal to sinus mechanism took place.

On search of the literature a report with similar observations was found.

No explanation is offered for this unusual mode of action of digitalis in auricular fibrillation.

Occupational Mercurialism Among Miners in the Eighteenth Century.—Several interesting observations relating to occupational mercurialism among miners were made during the 18th century. In 1719 Bernard de Jussieu presented a memoir to the Academy of Sciences in which he reported the situation of the workers in the Almaden mercury mines of Spain. Both free and slave labor were employed there, and both groups of workers suffered from mercury poisoning. Nevertheless the free miners, since they were at liberty to leave the mines and kept their persons clean, exhibited no evidence of mercurialism except for slight tremors. The slaves, on the other hand, imprisoned in their unclean quarters and without any real means of cleaning themselves, were afflicted with swellings of the parotid glands, stomatitis, salivation and pustular rashes. Giovanni Scopoli described mercury poisoning, with the characteristic trembling, among the miners around Alto Isonzo.—Rosen, George: *The History of Miners' Diseases*, New York, Schuman's, 1943.

6. Friedlander, R. D., and Levine, S. A.: *Auricular Fibrillation and Auricular Flutter Without Evidence of Organic Heart Disease*, New England J. Med. **211**: 624 (Oct. 4) 1934.

7. Burch, G. E.: *Auricular Fibrillation of Twenty-Two Months' Duration with Return to Normal Sinus Mechanism Without Aid of Quinidine*, Am. Heart J. **18**: 102 (July) 1939.

THE EFFECTIVENESS AND SAFETY OF
MERCUPURIN ADMINISTERED
ORALLYIN THE TREATMENT OF CONGESTIVE HEART
FAILURE

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Although the value and use of mercurial diuretics for the treatment of advanced congestive heart failure has been thoroughly established, there remains the necessity for controlled evaluation of the various preparations useful for this purpose. Studies on mercupurin and salyrgan,¹ mercurial suppositories² and orally administered salyrgan-theophylline³ have been reported from this laboratory. It is our purpose in this paper to present data on the effectiveness and safety of Mercupurin⁴ administered orally in the routine treatment of congestive heart failure.

STUDIES ON HOSPITALIZED PATIENTS

A total of 42 patients was studied, of whom 32 were hospitalized and 12 were ambulatory; 2 patients were included in both groups. For the hospitalized patients two schemes of administration of the Mercupurin tablets were utilized. Whenever a diuretic was considered to be necessary, either a single dose of 5 tablets (with the exception of 1 patient who received 6 tablets) was given in the morning or the patient was given multiple doses consisting of 2 tablets three times daily for two to four days. In 1 instance the administration of the tablets was continued for seven days. Regardless of the scheme of administration, a preliminary control period was established during which time the maximum effect of bed rest, oxygen, sedatives, limitation of fluid intake, dietary restriction and digitalis and ammonium chloride whenever given maintenance doses was ascertained. The weight curve was followed in preference to the measurement of urinary output, because it has been proved to be a more accurate and sensitive index of diuretic response.⁵ The urine was examined at frequent intervals for albumin and formed elements.

Table 1 summarizes the results in the hospitalized group of patients. A single dose of 5 Mercupurin tablets was given 30 times to 23 patients. A loss of 3 pounds (1.3 Kg.) or more in body weight within forty-eight hours after the administration of the diuretic was considered a satisfactory response. This response was obtained in 18 trials (60 per cent), or 16 patients (69 per cent). With the exception of patients 3, 10

and 22, the lack of satisfactory diuretic response could be attributed to the fact that they were not receiving either ammonium chloride or digitalis. For example, patient 1 responded when ammonium chloride was administered simultaneously with the Mercupurin tablets, and patient 9 stopped responding when digitalis and ammonium chloride were discontinued. In a few instances, such as in patients 10 and 11, the degree of edema was so slight that the lack of response was not surprising.

The multiple dose method was tried 23 times with 17 patients (table 1). A good diuretic response was obtained in 16 trials (69 per cent) and 12 patients (71 per cent). The lack of response in patient 3 is unexplainable. This patient also failed to respond to the single dose method. The failure in cases 20 and 31 could be attributed to the very slight degree of edema, while in case 23 the degree of failure was progressively worse because of lack of digitalis. The failure of the third trial in case 22 while the previous 2 trials were successful is also unexplainable. In patient 25 the lack of response may be attributed to severe failure precipitated by pneumonia. The patient also failed to respond to Mercupurin administered intravenously. However, previously when ambulatory the response to the tablets was very satisfactory.

Diuresis by the single dose method usually began within four to twelve hours and in the majority of instances was practically complete at the end of twenty-four hours. However, the diuresis persisted in several cases for forty-eight hours or longer. By the multiple dose method diuresis was usually noted within twenty-four hours but did not reach its peak before forty-eight or seventy-two hours.

STUDIES ON AMBULATORY PATIENTS

Twelve ambulatory patients whose severe congestive heart failure could not be controlled with a maintenance dose of a digitalis preparation were given 102 trials with Mercupurin tablets. Complete protocols summarizing each case are presented in table 2. Either patients were advised to start taking the tablets the day after the clinic visit at which the examination showed that a mercurial diuretic was indicated or the patient was given Mercupurin intravenously at the time of the clinic visit and advised to take the tablets when the edema had reaccumulated.

In general, giving the drug in doses of 1 or 2 tablets three times daily for two to four days was a satisfactory means of producing diuresis. It was possible to extend the time necessary for clinic visits for those patients who would ordinarily have required Mercupurin at weekly intervals, since the tablets definitely produced a satisfactory response sufficient to forestall the use of the parenteral preparation or delay the accumulation of edema. In only 8 of the 102 trials was the response considered to be ineffective for this purpose. The tablets were particularly useful if the patient could not be controlled by weekly injections of Mercupurin. The administration of the tablets in the period between clinic visits diminished or prevented the severe symptoms of congestive heart failure. Thus patient 2 remained free from paroxysmal dyspnea for the first time in a year, and patient 7, who previously had several hospital admissions for severe congestive heart failure, was able to remain ambulatory with minimal edema for over eight months.

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1. DeGraff, A. C.; Nadler, J. E., and Batterman, R. C.: A Study of the Diuretic Effect of Mercupurin in Man, *Am. J. M. Sc.* **191**: 526 (April) 1936.

2. Brightman, I. J., and Batterman, R. C.: The Treatment of Edema by Rectal Administration of Diuretics, *J. Lab. & Clin. Med.* **25**: 1038 (July) 1940.

3. Batterman, R. C.; DeGraff, A. C., and Rose, O. A.: Treatment of Congestive Heart Failure with an Orally Administered Mercurial Diuretic, *Am. Heart J.* **21**: 98 (Jan.) 1941.

4. Each tablet contains 100 mg. of Mercupurin powder equivalent to 30 mg. of mercury and 27 mg. of anhydrous theophylline, as compared with 135 mg. of Mercupurin represented in 1 cc. of the parenteral solution. Mercupurin tablets were supplied by Campbell Products, Inc.

5. DeGraff, A. C.; Nadler, J. E., and Batterman, R. C.: Brightman and Batterman.² Batterman, DeGraff and Rose.³

TABLE 1.—Effectiveness of Mercupurin Administered Orally to Patients Hospitalized for Congestive Heart Failure

No. Case	Diagnosis	Age	Digi- talis	Ammono- nium Chloride	Degree of Failure	Scheme of Administration	Weight Before	Weight After	Total Days Loss Diuresis	Comment
1. J. W.	Arteriosclerosis, hypertension, enlarged heart, myocardial fibrosis, coronary sclerosis, auricular fibrillation	65	Yes	No	+	5 tablets; single dose	211½	213¾	... None	
				1 Gm. t. i. d.	+	5 tablets; single dose	216¼	211½	4¾ 1	Good diuresis
2. M. S.	Arteriosclerosis, hypertension, enlarged heart, myocardial fibrosis, coronary sclerosis, regular sinus rhythm, bundle branch block	67	Yes	1 Gm. t. i. d.	+++	5 tablets; single dose	119¾	112¾	6½ 2	Good diuresis
				1 Gm. t. i. d.	+++	2 tablets t. i. d. for 4 days	112	103½	8½ 4	Mild diarrhea developed on 4th day; proctoscopy revealed no pathologic condition
3. E. H.	Unknown, enlarged heart, regular sinus rhythm	32	Yes	1 Gm. t. i. d.	++	5 tablets; single dose	244½	243	1½ 1	Diarrhea for 24 hours
				1 Gm. t. i. d.	++	2 tablets t. i. d. for 2 days	228¾	228	... None	No gastrointestinal upset
4. F. B.	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	63	No	No	+++	5 tablets; single dose	145½	139	6½ 2	Good diuresis; initiated diuresis, which persisted until patient lost all signs of failure; basal weight, 116
5. N. S.	Hypertension, arteriosclerosis, enlarged heart, old myocardial infarct, coronary sclerosis, regular sinus rhythm	45	Yes	1 Gm. t. i. d.	+++	6 tablets; single dose	172½	169¾	3¼ 2	Mild diuresis; no gastrointestinal upset
				1 Gm. t. i. d.	++	5 tablets; single dose	177½	171¾	6¼ 1	Good diuresis
				1 Gm. t. i. d.	++	2 tablets t. i. d. for 2 days	175	166½	8½ 3	Good diuresis
6. S. M.	Unknown, enlarged heart, regular sinus rhythm	40	No	No	+++	5 tablets; single dose	176	174¼	1¾ 1	
7. A. K.	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	70	Yes	1 Gm. t. i. d.	++	5 tablets; single dose	181	172	9 2	Good diuresis; maximum loss of weight in 2d 24 hour period
8. A. D.	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	68	Yes	No	++	5 tablets; single dose	128½	122½	6 3	Good diuresis; initiated diuresis, which persisted until basal weight of 106½ was reached
9. W. J.	Hypertension, enlarged heart, regular sinus rhythm	47	Yes	1 Gm. t. i. d.	+++	5 tablets; single dose	152	149	3 1	Slight nausea, abdominal colic; diarrhea for 24 hours
			No	No	+++	5 tablets; single dose	151¾	150	1¾ 1	No gastrointestinal upset
			Yes	1 Gm. t. i. d.	++	2 tablets t. i. d. for 4 days	146½	143½	3 4	
10. J. G.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, aortic stenosis, aortic insufficiency, auricular fibrillation	35	Yes	1 Gm. t. i. d.	+	5 tablets; single dose	117¼	116½	.. None	Diarrhea for 24 hours
11. L. G.	Rheumatic fever, enlarged heart, mitral insufficiency, mitral stenosis, aortic insufficiency, auricular fibrillation	44	Yes	No	+	5 tablets; single dose	128¼	129¼	.. None	Slight nausea
12. P. L.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	61	Yes	1 Gm. t. i. d.	+++	5 tablets; single dose	175¾	171¼	4½ 2	Good diuresis; followed as ambulatory patient
13. C. S.	Hypertension, enlarged heart, regular sinus rhythm	49	No	1 Gm. t. i. d.	+++	5 tablets; single dose	177	172½	4½ 2	Good diuresis
				1 Gm. t. i. d.	.....	5 tablets; single dose	179	173½	5½ 1	Good diuresis; followed as ambulatory patient
14. T. F.	Unknown, enlarged heart, regular sinus rhythm	42	Yes	No	+++	2 tablets t. i. d. for 5 days	172	158½	13½ 5	Good diuresis; initiated in first 24 hours
15. W. D.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	57	No	1 Gm. t. i. d.	+++	5 tablets; single dose	184¾	182¾	2 2	Mild diuresis; patient digitalized after 48 hours
16. E. B.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	54	No	1 Gm. t. i. d.	+++	5 tablets; single dose	180½	173	7½ 1	Good diuresis
				1 Gm. t. i. d.	+++	5 tablets; single dose	172½	167¾	4¾ 1	
				1 Gm. t. i. d.	+++	5 tablets; single dose	165¾	159	6¾ 1	Good diuresis
17. M. W.	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	68	No	No	++	5 tablets; single dose	124	121	3 1	
18. A. L.	Arteriosclerosis, hypertension, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm, bundle branch block	68	No	No	+++	5 tablets; single dose	144½	142½	2 1	
			No	No	+++	5 tablets; single dose	140¾	138	1¾ 2	Patient digitalized after this attempt
			Yes	No	++	2 tablets t. i. d. for 2 days	122¼	116¾	5½ 3	Treated on 2d admission; good diuresis with complete removal of failure
19. C. G.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	?	Yes	No	+	5 tablets; single dose	120	120	.. None	
20. L. B.	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	78	Yes	1 Gm. t. i. d.	+	2 tablets t. i. d. for 2 days	154	151½	2½ 2	
				1 Gm. t. i. d.	+	5 tablets; single dose	153	150	3 2	
21. E. P.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	61	No	No	+++	5 tablets; single dose	164¾	159	5¾ 3	Delayed diuresis in 2d 24 hour period; initiated diuresis with total weight loss of 9 pounds
22. S. R.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, regular sinus rhythm	56	Yes	1 Gm. t. i. d.	+++	5 tablets; single dose	142	143	None None	
				1 Gm. t. i. d.	+++	2 tablets t. i. d. for 2 days	142½	139¾	3¾ 2	Good diuresis
				1 Gm. t. i. d.	+++	2 tablets t. i. d. for 2 days	141½	134½	7 4	Good diuresis
				1 Gm. t. i. d.	++	2 tablets t. i. d. for 4 days	133	133½	None None	
				1 Gm. t. i. d.	++	2 tablets t. i. d. for 3 days				

TABLE 1.—Effectiveness of Mercupurin Administered Orally to Patients Hospitalized for Congestive Heart Failure—Continued

No. Case	Diagnosis	Age	Digitalis	Ammonium Chloride	Degree of Failure	Scheme of Administration	Weight Before	Weight After	Total Days Weight Loss	Diuresis	Comment
21 G C	Hypertension, arteriosclerosis, enlarged heart, myocardial fibrosis, coronary sclerosis, regular sinus rhythm	70	No	1 Gm t i d	+++	2 tablets t i d for 3 days	144	141½	2½	0	Diarrhea, nausea and vomiting on 3d day of administration; also in severe congestive heart failure
24 I P	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	55	Yes	1 Gm t i d	++	5 tablets; single dose	164	158	6	2	Good diuresis
25 N I	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, regular sinus rhythm	39	Yes	1 Gm t i d	+	2 tablets t i d for 4 days	147½	145½	2	1	Patient in failure because of pneumonia; previously responded while ambulatory
				1 Gm t i d	+	2 tablets t i d for 3 days	145¾	138¾	0	None	Continued with intravenous mercupurin with poor response
31 I S	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	72	Yes	1 Gm t i d	—	2 tablets t i d for 3 days	24	227¾	15¼	4	Excellent response; gained weight when tablets were discontinued
				1 Gm t i d	—	5 tablets; single dose	230	228	2	1	
				1 Gm t i d	—	2 tablets t i d for 3 days	228	210	18	1	Excellent diuresis; loss of 12 lbs in 1st 24 hours
				1 Gm t i d	—	2 tablets t i d for 3 days	208	199½	6½	4	Excellent diuresis
27 H S	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	66	Yes	No	+	2 tablets t i d for 3 days	175	159	16	5	Excellent response; initiated diuresis for total weight loss of 30 lbs of edema fluid
28 I A	Hypertension, enlarged heart, regular sinus rhythm	59	Yes	No	—	2 tablets t i d for 3 days	114	107¼	6¾	4	
29 M H	Arteriosclerosis, hypertension, enlarged heart, coronary sclerosis, myocardial fibrosis, auricular fibrillation	65	Yes	1 Gm t i d	—	2 tablets t i d for 4 days	168	160	8	4	
				1 Gm t i d	—	2 tablets t i d for 2 days	160½	153½	7		
30 A D	Arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	50	Yes	No	++	2 tablets t i d for 7 days	152¼	146¾	6	5	Response to intravenous mercupurin also poor (3¾ lb.)
1 M B	Hypertension, arteriosclerosis, enlarged heart, old myocardial infarction, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	61	Yes	No	+	2 tablets t i d for 3 days	141	128½	2½	3	Was practically edema free at time of administration of tablets
2 J G	Hypertension, enlarged heart, regular sinus rhythm	67	Yes	No	+	2 tablets t i d for 2 days	143¾	132¼	4½	4	

TOXICITY

In no case, regardless of method, was there any evidence of kidney irritation. Gastrointestinal irritation as a rule was very mild and subsided promptly. In the hospitalized group 4 patients had presented nausea, vomiting or diarrhea after a single dose of 5 tablets. In 3 of these instances no diuresis was noted, and in the 4th the minimal effective diuresis occurred. In the 1 instance, patient 9, in whom the dose was repeated, although it was ineffective, it was also free of any untoward reaction. With the multiple dose method 2 instances of gastrointestinal irritation were noted. In patient 2 this could possibly have been avoided if the medication was discontinued at the second or third day. In the other instance, patient 23, the severe congestive heart failure with visceral congestion may have played a part in the symptoms.

In the ambulatory group of patients gastrointestinal irritation of minor character was noted in 6 instances. Patient 4 had anorexia and nausea, which subsided promptly within twenty-four hours and did not deter repetition of the medication when necessary. Patient 7 noted an increased frequency of bowel movements after the first trial but continued the medication for a total of 15 trials without having further evidence of gastrointestinal irritation. Patient 8 also noted increased frequency of bowel movements following 2 trials. Diarrhea was noted in the first trial in patient 10, but subsequently no untoward reactions were noted when the treatment was repeated on 9 more occasions. Patient 11 had nausea and vomiting in 2 trials out of 8. In only 1 instance, that of patient 6, who had nausea and vomiting with most drugs administered orally, was the medication discontinued.

COMMENT

The favorable influence of theophylline on the diuretic effect and toxicity of mercurial diuretics has materially altered our concept regarding their use. Although, as pointed out by DeGraff and Nadler,⁶ they are not entirely free from toxic manifestations, the rarity of such occurrences explains their widespread popularity in the treatment of congestive heart failure. Several routes of administration of mercurial diuretics are available. For the patient with severe congestive heart failure necessitating rapid removal of the edema fluid, the parenteral route remains the method of choice. However, too sudden dehydration may result in two untoward sequelae of pronounced diuresis. Poll and Stern⁷ have called our attention to the syndrome of hypochloremia or tissue dehydration in the presence of edema. This is noted particularly in patients with advanced arteriosclerosis or patients in chronic failure who have been on a limited diet for months or years. The second possible sequela, digitalis toxicity in patients receiving high maintenance doses of the drug, is not an uncommon observation. Attributed to the mobilization of the digitalis preparation from the edema fluid during the process of diuresis, its occurrence definitely interferes with the proper management of the patient. As emphasized previously, for patients who do not require rapid removal of the edema fluid for symptomatic relief and for those who may develop the aforementioned sequelae, the oral mercurial diuretic should be the drug of choice.

6 DeGraff, A. C., and Nadler, J. F. A Review of the Toxic Manifestations of Mercurial Diuretics in Man. *J. A. M. A.* 119:1076 (July 25) 1942.

7 Poll, Daniel, and Stern, I. E. Untoward Effects of Diuresis. *Arch. Int. Med.* 58:1087 (Dec.) 1936.

For the hospitalized patient a single dose of 5 tablets (equivalent to 150 mg. of mercury) may be used if moderately rapid diuresis is required. Where gradual diuretic, will enhance the diuretic action. If necessary the mercurial tablets may be administered in courses three to five days apart.

TABLE 2.—*Effectiveness of Mercupurin Administered Orally in the Ambulatory Treatment of Patients with Congestive Heart Failure*

No.	Patient	Diagnosis	Age	Ammonium Chloride	Method of Administration of Mercupurin Tablets	Total No. of Trials	Results	Comment
1	N. F.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, regular sinus rhythm	59	Yes	2 t. i. d. for 2 days	2	Following first trial returned to clinic free of edema; 2d trial gave only temporary relief	Second trial was not too satisfactory because of complicating pneumonia necessitating hospitalization
2	P. L.	Hypertension, arteriosclerosis, enlarged heart, coronary sclerosis, myocardial fibrosis, regular sinus rhythm	61	Yes	2 t. i. d. for 2 days 2 t. i. d. for 3 days 2 t. i. d. for 4 days Weekly intervals	4 4 12	Good diuresis with each trial but slowly accumulated edema fluid; required mercupurin intravenously in addition at each clinic visit; previously mercupurin intravenously, weekly, was insufficient to prevent frequent attacks of paroxysmal dyspnea; since onset of tablet therapy was free of dyspnea for over five months	Patient admitted to hospital moribund following acute myocardial infarction; necropsy failed to reveal any gastrointestinal or kidney irritation
3	C. M.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, aortic insufficiency, auricular fibrillation	52	No	1 t. i. d. for 3 days at 2 week intervals	10	Good diuresis with complete removal of all edema	
4	A. N.	Syphilis, enlarged heart, aortic insufficiency, aortitis, regular sinus rhythm, cirrhosis of liver	52	No	2 t. i. d. for 2 days	2	Good diuresis with discontinuation of edema fluid; required intravenous mercupurin for complete removal of fluid	Mild anorexia and nausea for 24 hours when tablets were taken between meals
5	C. S.	Hypertension, enlarged heart, regular sinus rhythm	50	Yes	2 t. i. d. for 2 days 2 t. i. d. for 3 days	1 25	Good diuresis each time without any side reactions; prevented rapid accumulation of fluid, and clinic visits were extended from one to three week intervals; diuresis at times was equivalent to loss of 8 lbs. in edema fluid	Slow accumulation of edema necessitated use of mercupurin intravenously at each clinic visit
6	M. S.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, aortic stenosis, aortic insufficiency, tricuspid insufficiency, tricuspid stenosis, auricular fibrillation	38	Yes	2 t. i. d. for 3 days 1 t. i. d. for 2 days	1 1	No diuresis Mild diuresis	Nausea and vomiting Nausea; treatment continued with parenteral mercupurin; nausea and vomiting occurred readily with most drugs administered orally
7	N. T.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, aortic stenosis, aortic insufficiency, tricuspid insufficiency, auricular fibrillation	40	No	1 t. i. d. for 2 days at intervals of 2 to 3 weeks 2 t. i. d. for 1 day at intervals of 1 to 3 weeks	5 10	Satisfactory diuresis on 4 occasions; delayed diuresis for 48 hours in 1 instance Excellent diuresis with loss of 5 to 10 lbs. each trial	Increased bowel movement but no diarrhea with one trial No toxicity; since onset of oral therapy has been free from severe failure and has not required intravenous therapy for over 8 months
8	N. R.	Arteriosclerosis, enlarged heart, myocardial fibrosis, coronary sclerosis, auricular fibrillation	59	No	3 t. i. d. for 3 days	5	Diuresis was good with all but one trial	Slow accumulation of edema fluid necessitated intravenous mercupurin on 2 occasions; increased bowel movement, but no diarrhea following 2 trials
9	F. L.	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, auricular fibrillation	..	No	2 t. i. d. for 2 days	1	No diuresis	
10	A. K.	Hypertension, enlarged heart, regular sinus rhythm	59	No	2 t. i. d. for 3 days	1	Slight diuresis	Mild diarrhea necessitating temporary cessation of medicine was first tried, further trials had no untoward reaction
11	G. F.	Syphilis, enlarged heart, aortic insufficiency, aortitis, dilated aorta, regular sinus rhythm	..	No Yes Yes No No	2 t. i. d. for 2 days 2 t. i. d. for 2 days 1 t. i. d. for 2 days 2 t. i. d. for 2 days 1 t. i. d. for 4 days 1 t. i. d. for 5 days	3 3 2 6 1 1	Good diuresis but insufficient to prevent slow accumulation of edema fluid Diuresis in 4 trials Good diuresis No effect	Two trials not resulting in diuresis caused nausea and vomiting Patient varied in effectiveness; intravenous mercupurin at weekly intervals also ineffective to prevent reaccumulation of edema
12	J. D.	Arteriosclerosis, enlarged heart, myocardial fibrosis, auricular fibrillation	57	No	2 t. i. d. for 2 days 2 t. i. d. for 3 days	1 1	Excellent diuresis with complete removal of all signs of congestive heart failure	

removal of the edema is desired the multiple dose method of 2 tablets three times a day for two to three days has proved to be more than satisfactory. Ammonium chloride, as in the case of the parenteral mercurial

For the ambulatory patient it may be necessary to determine individually the proper dose and scheme of administration. It is advisable to begin therapy with 1 tablet taken for the first day at four hour intervals

for three doses. This may be repeated daily until diuresis is well established; the total period of administration should not exceed four days. If this dosage is insufficient, 2 tablets given according to the same method may be more effective. The patient with severe congestive heart failure may require supplementary use of the parenteral preparation at each clinic or office visit. In such a case the oral preparation should not be advised until the reaccumulated edema fluid again makes the patient uncomfortable. At the present time the daily maintenance dose of the oral mercurial diuretic is not recommended, since insufficient data are available as to the excretion and toxicity of mercury when the drug is chronically administered in this form. The use of the drug for periods of two to four days and, if necessary, repeated courses at intervals no shorter than four days has proved to be effective with a minimum of gastrointestinal irritation.

SUMMARY

In a group of 42 patients, Mercupurin tablets administered orally were found to be an effective and safe diuretic and, with proper use, are of definite value in the management of the cardiac patient with chronic congestive heart failure.

RECURRENT BULLOUS ERUPTION OF THE FEET AND HANDS (WEBER-COCKAYNE)

LOCALIZED EPIDERMOLYSIS BULLOSA

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My purpose in this paper is to report 2 instances of an unusual hereditary blistering dermatosis of the feet and hands and to call attention to its distinctive features so that differentiation from other common eruptions of the feet may be facilitated. The disease was first described by Weber¹ in 1926, who regarded it as a mild anomalous form of epidermolysis bullosa. Later Cockayne² examined its hereditary and familial aspects. Several reports dealing with the syndrome have appeared recently from various centers,³ indicating that probably it is not as rare as has been supposed. Because the condition has often been diagnosed as dermatophytosis and, indeed, had been so diagnosed for each of my patients at some time in the past, these cases are presented to reemphasize the dermatologic dictum that not all blistering eruptions on the feet are caused by fungi.

I shall also describe an additional atypical case—an example of "acquired" localized epidermolysis bullosa—which does not possess heredofamilial characteristics. This form manifests all the clinical features of the inherited disease, and I have no reason to assume that the two conditions are not biologically identical. The

cases of the inherited disease are presented separately solely out of deference to their remarkable genetic pattern and not because of other fundamental distinction.

REPORT OF CASES

CASE 1.—History.—A soldier aged 24, seen on June 8, 1943, gave a history of large blisters on his feet appearing for four years mostly in the summer months, especially after a great deal of walking. The blisters were painful only when he walked, and there was no pruritus or burning. The patient had noticed that since his induction into the Army, seven months before, the condition had become more severe, a circumstance which he attributed to increased walking and marching. During the month preceding his admission to the hospital he had worked as an automobile mechanic and had done relatively little walking, but the blisters nevertheless recurred. His army career had been spent exclusively at stations in Florida during warm or hot weather. While the patient was on furlough in Pennsylvania for ten days in May 1943 the eruption largely disappeared, an improvement due, the patient believed, to the cooler weather rather than to the respite from marching.

Questioning elicited the information that the patient's hands and fingers had always blistered too readily after moderate or sustained manual effort. However, there was no abnormal blistering of the skin after injury to other regions of the body. One other member of his family was affected: a 5 year old nephew, son of the patient's sister, has shown a similar abnormality of the skin of the feet since infancy, blisters occurring also during the summer months only. In both cases there was no consanguinity of the parents.

Examination.—The patient walked with some discomfort. Several thick-walled bullae, up to 1 inch (2.5 cm.) in diameter, were present on the soles, especially over the ball of each foot and immediately behind the toes. There were no calluses or scars over the soles, nor was there appreciable interdigital scaling, fissuring or maceration or evidence of either inflammation about the lesions or regional lymphadenitis. Nikolsky's sign, diminished dermal-epidermal adhesion, could not be elicited over various parts of the body. Microscopic examination of epidermis from the plantar blebs failed to disclose fungi.

Course.—After hospitalization for ten days, during which time the patient was largely confined to bed, the lesions were collapsed, dry and exfoliating. The patient was then encouraged to walk about the hospital area at will. Within two days four new bullae on each foot, averaging about ½ inch (1 cm.) in diameter, had developed on the toes and distal part of the sole. The lesions at first were flaccid, becoming tense as they increased in size. Aseptic aspiration of the bullae and a reduction of walking resulted in rapid improvement during the next few days of observation.

CASE 2.—History.—A soldier aged 26, admitted to the hospital Aug. 15, 1943, stated that since earliest childhood he had had recurrent blisters on his feet and to a lesser degree on his hands. His health had otherwise been excellent. He retained at all times, regardless of the amount of walking performed, at least two to four blisters on each sole. On the hands lesions would not develop unless he performed work entailing considerable manual friction and pressure. For example, moderately painful blisters would appear on his hands and fingers if he raked a lawn or if he gripped the steering wheel of a vehicle tightly while driving, even though he wore gloves during both operations. Trauma of other parts, such as the shins, caused the skin to become denuded easily ("barked"), but blisters would not result.

There was no consanguinity of the parents. The paternal grandmother had had the same disease. The patient's father during his youth had also suffered recurrent blisters on his soles, but in a mild form and only after activities such as dancing or strenuous walking; apparently there has been no similar trouble in later life. A representation of the familial incidence of the disease is given in figure 1.

1. Weber, F. P.: Recurrent Bullous Eruption on the Feet in a Child, *Proc. Roy. Soc. Med. (Sect. Dermat.)* 19:72 (June) 1926.

2. Cockayne, E. A.: Recurrent Bullous Eruption of the Feet, *Brit. J. Dermat.* 50:358-362 (July) 1938.

3. Haldane, J. B. S., and Poole, R.: A New Pedigree of Recurrent Bullous Eruption of the Feet, *J. Hered.* 33:17-18 (Jan.) 1942. Leider, M., and Baer, R. L.: Epidermolysis Bullosa Hereditaria: Report of Two Cases with Extensive Family Histories, *Arch. Dermat. & Syph.* 46:419-424 (Sept.) 1942. Mansur, H. D., Jr.: Hereditary Epidermolysis Bullosa, *J. A. M. A.* 120:1122-1124 (Dec. 5) 1942. Kierland and Harrison.⁷ Frank.⁶ Franks and Davis.⁴

Examination.—Small bullae, each with a violaceous halo, were present on the volar aspect of the left third and fourth fingers (fig. 2a). Large thick-walled bullae occupied the dorsa of the toes and the weight bearing parts of the toes and soles, and one large bulla occurred on the lateral surface of the left heel (fig. 2b). There were no scars or calluses. Microscopic examination of epidermis from the lesions disclosed no fungi.

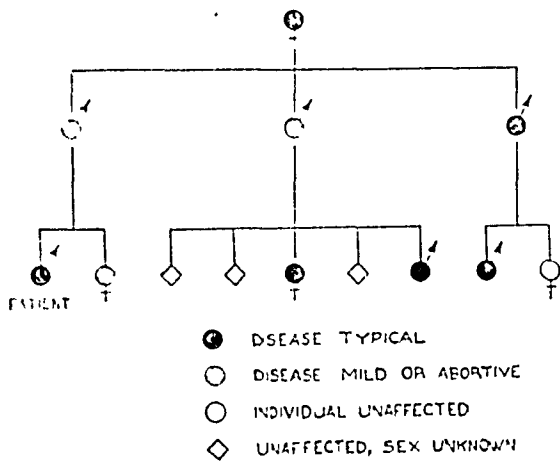


Fig. 1. Pedigree of patient 2 with recurrent bullous eruption of feet and hands, illustrating the dominant hereditary transmission of the defect.

A small area of the volar surface of the right forearm was traumatized by rubbing vigorously with a blunt metal instrument. Shortly afterward the skin became reddened and puffy, and within three hours a small vesicle appeared in its center. The reaction persisted for twenty-four hours. A biopsy of unaffected skin from the forearm in the proximity of the induced vesicle failed to reveal abnormality of any of its structures, including the elastic tissue.

Course.—A recent communication from the patient reports that bullae have become more frequent on the hands, probably because of his work, which consists of handling parcels. He does little walking, but, as usual, bullae still recur on his feet.

The following case lacks the qualities of onset in childhood and familial background displayed in the 2 previous cases. The recurrent blebs, singularly limited to the fifth toes, constitute so peculiar and definite a syndrome that I am at a loss to classify it in any category other than the present one. This case and 1 recorded by Franks and Davis⁴ will serve as a basis for the hypothesis that variants of localized epidermolysis bullosa may be of tardy development and not necessarily familial or hereditary.

CASE 3.—History.—An officer aged 23 years acquired single, slightly tender, recurrent blisters on the plantar aspect of each small toe during the spring of 1942, within one month after his induction into the Army. Usually the blister would rupture several days after its appearance, and a new one would arise at the identical spot within a few days or several weeks. In the winter of 1942-1943 there had been little trouble with the lesions, but in March 1943 they reappeared and recurred continuously.

Blisters had never appeared elsewhere on his feet or on his hands, nor had any member of his family been known to have a similar disease. Abundant well managed fungicidal treatment had in the past been of no avail in stemming the eruption. He had tried wearing open toe sandals and lamb's wool wrapping about the affected toes, and he had had shoes fitted under the personal supervision of a competent orthopedist, all without benefit.

Examination.—The following observations have been made on numerous occasions since May 1943: The lesions are symmetrically placed near the tip of each fifth toe, at the apex of the pyramid formed by the plantar, inferomedial and medial

surfaces of the toe (fig. 3). A flaccid bleb arises with thick walls, and the surrounding epidermis is thickened, spongy and macerated. Hyperhidrosis of the feet is present to a moderate degree, but there is no interdigital scaling suggestive of dermatophytosis. Repeated microscopic examination of epidermal material and cultures on Sabouraud's medium have failed to disclose evidence of fungi in the affected skin.

Course.—In November 1943 the patient was confined to the hospital for one week at rest in bed, during which time the lesions healed. He then resumed walking, but within the next few weeks he was unable to cause the bullae to reappear in spite of long walks in heavy shoes. He ascribed his improvement to the cooler weather, as it duplicated his experience of the previous year. With the advent of hot weather in February 1944 identical bullae again formed on the toes.

Admittedly, further observation of my third patient would be desirable before the diagnosis of epidermolysis bullosa could be unequivocally accepted. Against this criticism my defense is that many diagnostic possibilities were carefully considered in studying the case and then were one by one discarded as inadequate, until by elimination epidermolysis bullosa stood alone as the sole acceptable classification for the disorder.⁵

DIFFERENTIAL DIAGNOSIS

The bullae in the disease under consideration are often large, up to 1 inch diameter or larger. Such huge bullae are not characteristic of ordinary forms of dermatophytosis, in which the vesicles are generally of pea size or

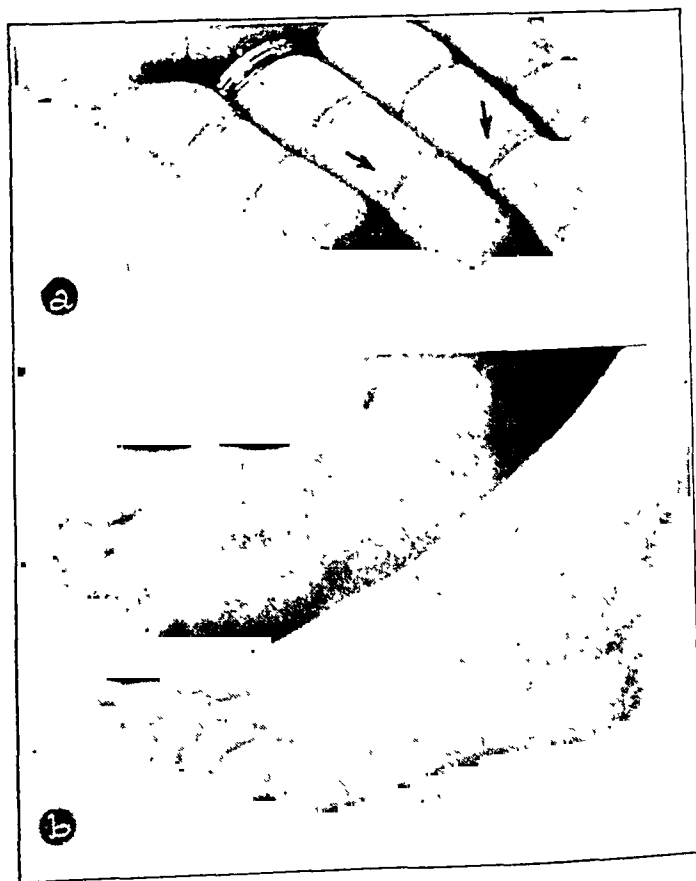


Fig. 2.—Recurrent bullous eruption (case 2) showing (a) two small blebs on fingers and (b) large blebs on toes, right sole and lateral aspect of left heel.

smaller. It is, of course, true that giant bullae may emerge exceptionally in cases of dermatophytosis and also of dermatophytid, and this circumstance may lead in the absence of other data to confusion with epidermolysis bullosa. Both the fungus infection and epidermolysis

5. Capt. Reuben M. Reifler, M. C., A. U. S., has informed me that recently he observed a similar case with onset in adult life, the bullae occurring exclusively on the great toes.

4. Franks, A. G., and Davis, M. J. J.: Epidermolysis Bullosa. Arch. Dermat. & Syph. 47: 647-650 (May) 1943.

bullosa exhibit in common the tendency to exacerbation during hot weather. If pruritus is a symptom, it will suggest dermatophytosis. A history of recurrent lesions since childhood is practically pathognomonic of epidermolysis bullosa, because dermatophytosis of the feet in children is distinctly rare. Direct microscopic search of the skin for fungi is essential in any doubtful case and



Fig. 3.—Recurrent bulla of tip of fifth toe (case 3). The dark crust was produced by the application of solution of silver nitrate.

constitutes a simple expedient for establishing a diagnosis.

Large traumatic blebs, from friction of improperly fitting shoes and socks and from excessive walking, normally heal in time; or, if walking is continued, the skin of the feet becomes "toughened" or calloused in consequence of the repeated insult. Not such is the case, however, with epidermolysis bullosa, in which the epidermal reaction is not the physiologic one of thickening for protection but is rather a passive yielding to the pressure of fluid exuded beneath it, and this process is repeated over and over again. There is no scarring, callus formation or other residuum of the bullae.

Contact dermatitis of the feet due to sensitization to shoe leather or dyes may lead occasionally to the formation of huge bullae, but they are nearly always confined to the sides or dorsa of the feet and toes, where the skin is relatively thin, and especially over the great toes. The thick corneous covering of the soles constitutes an important barrier to irritant chemical agents, and contact eruptions of the plantar surfaces are therefore either imperceptible or much less severe than eruptions over the dorsa of the feet. Also epidermolysis bullosa is primarily a noninflammatory disease, and its bleb is initially unattended by signs of erythema. This is in distinction to contact dermatitis, in which erythema is one of the earliest visible phenomena induced by the offending material and vesiculation is associated with pruritus and other eczematous accompaniments, such as edema, scaling, exudation, crusting and excoriations.

Bullous drug eruptions, plantar and palmar eruptions of congenital syphilis and bullous scabies in infants may be mentioned without further comment as other conditions which might rarely be considered in the differential diagnosis.

COMMENT

In epidermolysis bullosa an inherent vulnerability of the skin leads to the formation of blebs over a part subjected to mechanical trauma. Classically the skin over the entire body, or most of it, partakes of this predisposition, and in some cases permanent scarring results. For the variant described by Weber and Cockayne, how-

ever, the abnormality is localized to a great extent, so that in general the feet manifest the lesions preponderantly and in many cases even exclusively. Appearing first during infancy or earliest childhood, the bullae apparently represent an exaggeration of the normal tendency of the skin to blister as a response to physical irritation. When blebs appear on the hands in localized epidermolysis bullosa they are usually not so prominent nor so abundant as those on the feet. A few transient lesions elsewhere than on the feet and hands are occasionally observed. Such instances, I believe, constitute transitions between the strictly localized forms of the disease on the feet and the classic, generalized, inordinately blistered forms presented in the cases of the textbooks.

Most authors have recorded failure to produce fresh lesions in their patients by rubbing the skin. Frank⁶ found that in his patient bullae developed after vigorous rubbing over the sides of the feet but not on other areas, including the plantar surfaces. In my case 2 there was a latent tendency for blister formation over the normal cutaneous surface, as indicated by the vesicular reaction elicited on rubbing a region of the skin which had never spontaneously blistered. Weber¹ originally suggested that irritation of the feet in moist socks during warm weather might account for the eruption rather than trauma alone. Cockayne² decided that the exciting cause for the formation of bullae in this disease is probably a combination of pressure and moisture. Of interest is the exacerbation of lesions during hot weather, a seasonal variation consistently manifested by the majority of patients (and known often to occur as well in the generalized forms of epidermolysis bullosa). The skin is not abnormally reactive to thermal applications, however. What role pathologic porphyrin metabolism may play in this process is deserving of further investigation.⁷

Usually the patients report multiple familial cases of localized epidermolysis bullosa affecting several generations. However, there are also solitary, presumably nonfamilial cases on record.⁸ It is conceivable that the disease in the occasional patient who can furnish no information indicating a hereditary influence may actually have had its genetic inception as a mutation. My third case, presented as an acquired form of the eruption, is therefore remarkable not because it lacks hereditary background but because of its origin in adult life.⁹ Comparable circumstances of atypical development in later life are not, however, unprecedented among other, more familiar, hereditary diseases. It will be noted also that the first patient did not exhibit lesions on his feet until the age of 20, although his hands had been affected since childhood, which indicates a local tardiness in development of the syndrome. There is no doubt that the strenuous conditions of military life may cause to become manifest an otherwise latent inherent vulnerability of the skin; to this fact I ascribe the onset of the disease in my third patient shortly after his induction into the Army.

In a case of epidermolysis bullosa reported recently by Dean¹⁰ lesions limited to the hands and fingers and

6. Frank, S. B.: An Unusual Variant of Epidermolysis Bullosa: Recurrent Bullous Eruption of the Feet, *Arch. Dermat. & Syph.* 17: 327-334 (March) 1943.

7. Kierland, R. R., and Harrison, M. W.: Epidermolysis Bullosa with Unusual Distribution and Elevated Urinary Porphyrins: Report of a Case, *Proc. Staff Meet., Mayo Clin.* 15: 313-316 (May 15) 1940.

8. Weber, J. Kierland and Harrison.

9. Humbley, J. L., and Smith, D. C.: Epidermolysis Bullosa Acquisita, *South. M. J.* 34: 364-370 (April) 1941.

10. Dean, D. M.: A Case of Epidermolysis Bullosa Hereditaria, *J. Roy. Navy M. Serv.* 27: 74-79 (Jan) 1941.

with distinct familial transmission were exhibited. This might be regarded as an analogous form of strictly regional epidermolysis bullosa. But the scarring produced by the lesions, the deformed finger nails and the imperfect dental development all combine to classify the case as one of localized "dystrophic" epidermolysis bullosa.

In contrast to this the "simple" type of epidermolysis bullosa, of which the recurrent bullous eruptions of Weber and Cockayne seem to be a subgroup, never produces abnormal sequelae in the skin; and the cutaneous appendages are invariably normal.

SUMMARY AND CONCLUSIONS

Cases of a recurrent blistering eruption of the feet and hands with dominant heredity, comprising a characteristic localized form of epidermolysis bullosa, were observed. The bullous lesions are preceded by mild grades of local friction, pressure, heat and moisture. One of the cases reported is unique because of strict limitation of the lesions to the fifth toes, onset in the third decade of life and absence of other familial cases; but examination of the literature indicates that failure to demonstrate a hereditary basis does not preclude classification in this category. The question of whether the boundaries of the syndrome should be defined by the hereditary or by the topographic features cannot be decisively answered. I favor the latter criterion, for it is my impression that the disease is the same, with or without familial background. But in the former group the dominant heredity is so striking a characteristic that these cases are deserving of the special recognition first accorded to them by Cockayne. There are apparently gradations of severity of the syndrome, which in the cases of more extensive involvement probably span the transition between purely localized forms and generalized epidermolysis bullosa.

The strenuous physical demands of military life may be conducive to activation of a latent blistering tendency, or they may exacerbate a previously mild form of the disease to the point of temporary disablement. The diagnosis in most cases is established by the family history, onset in childhood and relationship to excessive walking or manual work. Diagnostically the disease seems most frequently to be confused with dermatophytosis of the feet, from which it may be distinguished by the foregoing features and by a carefully conducted mycologic examination of the affected skin. Probably localized epidermolysis bullosa is not as uncommon a disorder as has been hitherto believed.

Psychologic Disturbances Among Children.—The general belief is that there has been no great increase in psychologic disturbances among children in the countries at war and that the majority of those that exhibited them presented problems also before the war. Analysis of the behavior problems indicates that in 10 per cent of the cases the foster home was unsuitable; in 19 per cent the parents of the child were the disturbing factor and, in the rest, the difficulty was due to some preexistent personality or intellectual anomaly. Disorganization of the child's regular routine is a very devastating factor. Rest, sleep, food, warmth are important physical requisites, while amusements are indispensable for morale. Favorable psychological conditions should take into consideration the social status of the children and provide for billets of about the same social level.—Davis, John E.: *Principles and Practice of Rehabilitation*, New York, A. S. Barnes & Co., Inc., 1943.

ERYTHROCYTE DAMAGE BY LIPEMIC SERUM IN NORMAL MAN AND IN PERNICIOUS ANEMIA

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Describing the absorption of the products of fat digestion into the lymphatic system instead of into the intestinal blood capillaries, A. P. Mathews¹ wondered "why the fat should thus be passed into the blood by going . . . through the thoracic duct" and ventured the prediction that "there is very little doubt that some good reason exists for this peculiar arrangement." The following experiments conducted by us and other collaborators at the University of Chicago have partially provided the "good reason."

Lacteal lymph collected close to the small intestine in dogs after a fatty meal is strongly hemolytic.² Some free fatty acids and soaps, which apparently escape resynthesis into neutral fat during the absorption of the digestion products of fat, are demonstrable in chyle in quantities sufficient to account for this hemolysis.³ By the time the chyle reaches the subclavian vein these hemolytic agents are decreased in concentration, probably largely because thoracic duct chyle is diluted by lymph from parts of the body other than the intestine.²

The following safeguards appear to protect against hemolytic fatty acid or soap entering the blood stream too rapidly or in too great amounts:⁴ A high fat meal tends to cause vomiting; the emptying time of the stomach is longer after a fat meal than after meals rich in carbohydrate or protein; during absorption most of the injurious fatty acids and soaps are resynthesized into harmless neutral fat; the unresynthesized hemolytic substances entering the lacteals are diluted in the thoracic duct, and they enter the blood stream slowly and mix in the subclavian vein and the heart with blood from all the body instead of mixing initially with only the blood in the intestinal capillaries.

Despite these protective mechanisms, after a fat meal the circulating red blood cells become exposed to a sufficient quantity of the hemolytic agents to increase the rate of normal daily red cell destruction. In dogs,⁵ and also (as shown in another laboratory) in human infants,⁶ the daily excretion of the degradation products of hemoglobin is greater on a high than on a low fat diet. Also dogs' red blood cells exposed to lipemic

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The cooperation of Drs. R. W. Keeton and L. R. Limarzi of the Illinois Research Hospital of the University of Illinois, and of Drs. Gurth Carpenter and Leon Jacobson of the Billings Memorial Hospital of the University of Chicago, in securing patients for this study, is greatly appreciated.

1. Mathews, A. P.: *Physiological Chemistry*, ed. 3, New York, William Wood & Co., 1920, p. 452.

2. Johnson, V., and Freeman, L. W.: The Adaptive Value of Absorption of Fats into the Lymphatics, *Am. J. Physiol.* **124**: 466 (Nov.) 1938.

3. Freeman, L. W., and Johnson, V.: The Hemolytic Action of Chyle, *Am. J. Physiol.* **130**: 723 (Oct.) 1940.

4. Longini, J., and Johnson, V.: Increased Red Blood Cell Fragility After Fat Ingestion, *Am. J. Physiol.* **140**: 349 (Dec.) 1943. Johnson and Freeman.²

5. Freeman, L. W.; Loewy, A.; Marchello, A., and Johnson, V.: Increased Total Bile Pigment Output on a High Fat Diet, *Federation Proc.* **1**: 25 (March) 1942. Loewy, Freeman, Marchello and Johnson.¹¹

6. Josephs, H. W.; Holt, L. E.; Tidwell, H. C., and Kajdi, C.: Influence of Fat upon the Excretion of Urobilin, *J. Clin. Investigation* **17**: 532 (July) 1938. Josephs, H. W.; Holt, L. E.; Tidwell, H. C., and Kajdi, C.: The Influence of Dietary Fat upon the Excretion of Urobilin, *Bull. Johns Hopkins Hosp.* **71**: 84 (Aug.) 1942.

serum *in vitro* are immediately rendered more fragile.⁷ These experiments suggest that red cells are destroyed *in vivo* very soon after the products of fat digestion enter the blood stream. Actually there is an increased bilirubin excretion in anesthetized dogs within an hour or two after intravenous injection of small quantities of fatty acid or soap.⁸

In most of these experiments on red blood cells, rather large quantities of fat (5 to 10 Gm. per kilogram of body weight) were fed. The question remained whether the ingestion of fat in quantities more nearly physiologic would produce similar damage to red blood cells. Also the extent to which the findings on dogs might be applicable to man remained to be determined.

ERYTHROCYTE FRAGILITY IN NORMAL MAN

In experiments on normal human subjects a breakfast of 1 pint of 32 per cent whipping cream (about 150 Gm. of fat) was given in each experiment. A fasting blood sample was drawn at the time of the meal; some of this was oxalated, providing red blood cells for the experiment, and the rest was allowed to clot and was centrifuged, providing a sample of fasting serum. Blood drawn at two hours and at three and one-half or four and one-half hours after the fat meal provided samples of lipemic serum. The following mixtures were made in duplicate: (A) one volume of red cells (oxalated blood) plus one volume of fasting serum (mixed for two hours) plus 2 volumes of distilled water (mixed for thirty minutes) and (B) an identical mixture except that lipemic serum was employed instead of the fasting serum of mixture A. Red blood cell counts were then made on each mixture in quadruplicate. This procedure constituted a fragility test in which susceptibility to hypotonic hemolysis was compared for red blood cells exposed to fasting serum and red blood cells exposed to lipemic serum. In a few of the experiments, besides the addition of water and performance of the fragility test described, equal quantities of powdered sodium oleate were dissolved in the fasting control and the lipemic serum samples.

The results are plotted in chart 1. All "control counts" on mixture A (red cells plus fasting serum) are arbitrarily placed at 100 per cent. "Test counts" on mixture B (red cells plus lipemic serum) are plotted as percentages of the control count. Inspection of chart 1 shows that in general the test counts are lower than the control counts, indicating that exposure of normal human red blood cells to lipemic serum renders those cells more susceptible to hemolysis by distilled water or by soap solutions. Chance variations or experimental error should produce a symmetrical pattern of columns centered at 100 per cent. Statistical analysis of the results of 111 pairs of observations on 27 subjects reveals that the counts on red cells exposed to lipemic serum are significantly lower than the counts on red cells exposed to fasting serum, even though the average of all test counts is only about 6 per cent below the control counts.

Forty-eight additional pairs of observations were made on 17 normal human subjects who drank 150 Gm. of corn oil instead of whipping cream. The results (not included in chart 1) similarly showed a significant erythrocyte-damaging effect of lipemic serum.

ERYTHROCYTE DAMAGE IN PERNICIOUS ANEMIA

The experiments cited and here reported indicate that an appreciable part of the daily destruction of red blood cells in normal man may be attributed to the injurious effects of fat ingestion, although the normal bone marrow seems fully able to compensate for these red cell losses. However, it seems possible that an increase in this destructive effect of ingested fat might be responsible for certain human anemias. Experiments were performed on pernicious anemia, comparing the hemolytic effect of lipemic serum on red cells in 8 cases of untreated pernicious anemia, 6 cases of adequately treated pernicious anemia and 7 normal individuals. In each experiment a fasting blood sample was drawn. A portion of this was heparinized, providing cells for the experiment; the remainder was allowed to clot, providing fasting serum. A pint of 32 per cent cream was given, and in three to four hours another blood sample was drawn to provide lipemic serum. The following mixtures were made in duplicate: (A) one volume of cells (heparinized blood) plus one volume of fasting serum and (B) one volume of cells (heparinized

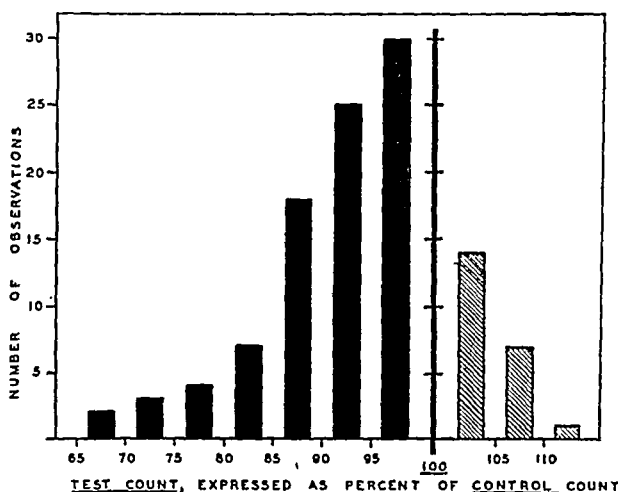


Chart 1.—Results of 111 pairs of observations on the susceptibility of red blood cells of 27 normal human subjects to damage by lipemic serum. "Control counts" are the red blood cell counts (considered as 100 per cent in each of 111 observations) on one volume of centrifuged oxalated blood plus one volume of fasting serum (mixed for two hours) plus two volumes of distilled water (mixed for thirty minutes). "Test counts" are the red blood cell counts (usually less than 100 per cent) on the same mixture except that lipemic serum replaced fasting serum. Black columns, 89 observations showing decreases in counts after exposure of red cells to lipemic serum. Cross hatched columns, 22 observations showing somewhat higher counts after exposure of red cells to lipemic serum. Chance variations or experimental error should produce a symmetrical pattern of columns centered at 100 per cent.

blood) plus one volume of lipemic serum. The paired mixtures were shaken for two minutes and in some instances were kept at 5 C. for sixteen hours. Quadruplicate red cell counts were then made on each mixture. It is noteworthy that these were not fragility tests but measurements of direct hemolytic action of lipemic serum on red cells.

The results are plotted in chart 2. Each erythrocyte count on red blood cells mixed with lipemic serum (test count) is expressed as a percentage deviation from the count on red cells from the same blood sample mixed with fasting serum (control count). In normal and treated pernicious anemia subjects the test counts (on cells plus lipemic serum) ranged from 5 per cent more than the control counts (on cells plus fasting serum) to 6 per cent less than the control counts. This range approximates the limits of accuracy of the experimental procedure. By contrast, the test counts on the 8

7. Longini, J.; Freeman, L. W., and Johnson, V.: Increased Red Blood Cell Fragility During Lipemia, *Federation Proc.* 1: 51 (March) 1942. Longini and Johnson.
8. Freeman, L. W.; Loewy, A., and Johnson, V.: *In Vivo* Hemolysis Produced by Soap Injection, *Am. J. Physiol.* 140: 556 (Jan.) 1944.

untreated pernicious anemia cases were from 4 to 17 per cent lower than the control counts, indicating that exposure of such cells to lipemic serum destroyed from 4 to 17 per cent (average nearly 9 per cent) of the cells. Although too few in number to analyze statistically or to warrant final conclusions, these experiments

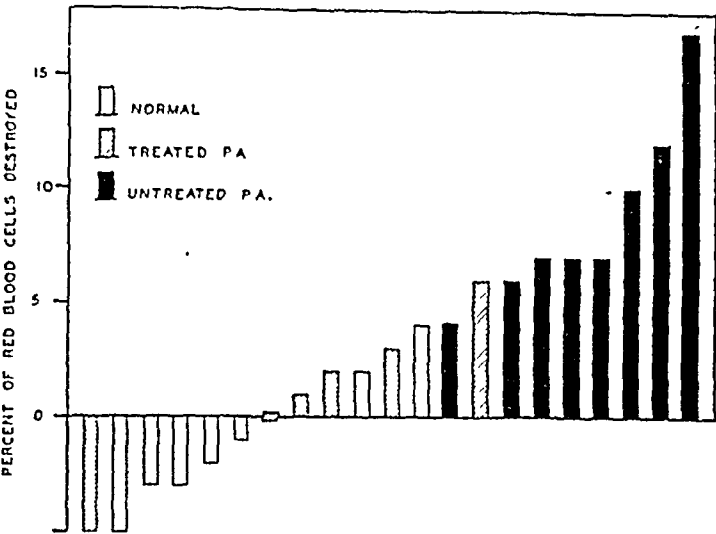


Chart 2.—Comparison of the hemolytic action of lipemic serum on red blood cells in 7 normal individuals, 6 cases of treated pernicious anemia and 8 cases of untreated pernicious anemia. Test counts on red cells plus lipemic serum are plotted as percentage deviations from the control counts on red cells plus fasting serum.

strongly suggest that in untreated pernicious anemia the ingestion of fat is more injurious to red blood cells than in treated pernicious anemia or normal man. This effect might have been due to either or both of the following: (1) The erythrocytes in pernicious anemia may be more susceptible than normal red cells to damage by lipemic serum or (2) the plasma in pernicious anemia may contain a greater effective concentration of the damaging agent after a fat meal. The former possibility was tested on patients with pernicious anemia and other anemias, in experiments which compared the fragility-increasing effect of the lipemic serum of normal individuals on the red cells (in oxalated blood) of normal and anemic subjects. For each experiment the four mixtures presented in the table were made in duplicate.

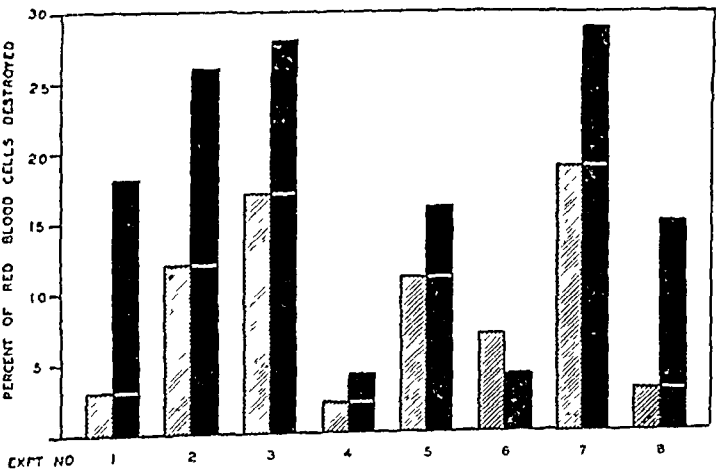


Chart 3.—Comparison of increased red blood cell fragility (produced by exposing the cells to normal lipemic blood plasma) in normal men and in untreated pernicious anemia. Cross hatched, destruction (in a standard fragility test) of normal red blood cells on exposure to normal lipemic serum. Black, destruction of red blood cells of untreated pernicious anemia patients on exposure to same sample of normal lipemic serum.

employing one volume of each component. Each mixture was shaken for two hours, two volumes of distilled water were added, shaking was resumed for thirty minutes, and finally quadruplicate erythrocyte counts were made.

Sixty sets of observations were made on 12 anemic patients, 7 with anemias other than pernicious anemia and 5 with pernicious anemia adequately controlled with liver therapy. In these cases the fragility of the cells was increased by exposure to normal lipemic serum, but this increase was no greater than that produced by the same lipemic serum on the cells of normal subjects.

By contrast, 2 patients with pernicious anemia who had not been receiving specific therapy gave the results plotted in chart 3. Eight sets of observations were made on these patients. In each experiment lipemic plasma from a normal individual increased the fragility of the red cells of the normal control. But in 7 of the 8 observations that same lipemic plasma from a normal man had a greater fragility-increasing effect on the red cells in untreated pernicious anemia. In five experiments the effects were striking.

These observations strongly suggest that the ingestion of fat may injure the red cells sufficiently to contribute significantly to the anemia, and that an abnormal sensitivity of the red cells to the products of fat absorption may be an etiologic factor in pernicious anemia.

CONCENTRATION OF FATTY HEMOLYSIN IN LIPEMIC SERUM

Besides this increased erythrocyte sensitivity to the products of fat digestion, it is also possible that pernicious anemia might be related to the development of an abnormally high plasma concentration of erythrocyte-damaging material following fat ingestion. Evidence for this could come either from chemical analyses

Mixtures Employed

Mixture number.....	1	2	3	4
Oxalated whole blood (red cells) of	Normal subject	Normal subject	Anemic case	Anemic case
Serum of normal individual	Fasting	Lipemic	Fasting	Lipemic

of lipemic serums for fatty acid and soap content or from experiments testing the fragility-increasing effect on red blood cells produced by pernicious anemia lipemic serum as compared with normal lipemic serum. Such experiments have not yet been carried out.

Prolonged feeding of a high fat diet in animals would appear to be the simplest way to effect such a condition experimentally. Rabbits, guinea pigs and rats were given large quantities of fat in the diet or by stomach tube for three to eight weeks. Occasionally there were transitory depressions of the red blood cell count, but no real anemia developed, although there are reports of production of anemia in animals from the administration of fatty acids⁹ and fats.¹⁰ Dogs¹¹ and human infants⁶ administered a sufficiently high fat diet to increase the bile pigment excretion also failed to develop an anemia. In general, normal animals seem able to compensate for plasma increases in fatty erythrocyte-damaging substances probably mainly by increasing the rate of production of red blood cells but perhaps also by neutralizing these hemolysins in the blood stream.

In one series of experiments in this laboratory the blood pictures of dogs maintained on a high fat diet

9. Faust, E. S. Ueber chronische Ölsaurvergiftung. Arch. f. exper. Path. u. Pharmacol. (supp.) 59: 171 (Oct.) 1908.
10. Adler, H. M.: The Experimental Production of Pernicious Anemia in Rabbits. J. M. Research 28: 199 (May) 1913.
11. Loewy, A.; Freeman, L. W.; Marchello, A., and Johnson, V.: Increased Erythrocyte Destruction on a High Fat Diet, Am. J. Physiol. 138: 230 (Jan.) 1943.

for several months were compared with those of dogs on a low fat diet.¹² A secondary anemia was maintained in all animals by repeated bleedings. Recovery from the anemia was approximately as rapid and as complete in the dogs on a high fat diet as it was in the dogs on a low fat diet. However, autopsy revealed a greater amount of active hemopoietic tissue in the bone marrows of the fat-fed dogs. This indicates that, although recovery from hemorrhage was not appreciably impaired by a high fat diet, the bone marrow of fat-fed animals was taxed more than the marrow of anemic dogs fed a low fat diet.

Attempts were also made to drive the products of fat digestion directly into the blood capillaries of the intestine so that injurious agents would mix with the relatively small quantities of blood flowing through the intestinal capillaries instead of being diluted in the thoracic duct and slowly mixing in the subclavian vein with large quantities of blood. The results were inconclusive. Ligation of all visible intestinal lymph vessels in dogs under anesthesia and subsequent feeding of high fat diets produced no anemia. Autopsies revealed regeneration and anastomoses of lymphatics across the points of ligation within two to four weeks. In another series of observations on dogs, infusion of thoracic duct chyle into small intestinal arteries, so that chyle and blood were mixed in the intestinal capillaries, yielded inconsistent results on the rate of bile pigment excretion in acute experiments.

BLOOD DESTRUCTION IN PERNICIOUS ANEMIA

These experiments lend support to the concept that hemolysis is at least a factor in pernicious anemia. The findings of bilirubinemia, greatly increased bile pigment excretion and the high iron content of the serum, liver, spleen and kidney, ordinarily identifying "hemolytic anemias," appear in pernicious anemia. Whipple¹³ sought to reconcile such findings with the maturation-arrest theory by assuming that hemoglobin or its precursors are formed extracellularly and are split to bile pigments in the absence of mature erythrocytes to take them up. However, direct evidence on this point is lacking.

In this connection Dobriner and Rhoads¹⁴ refer to experiments on iron-deficiency anemias. In these anemias, since injected iron is recovered almost quantitatively as hemoglobin, there is no reason to assume a defect in the synthesis of protoporphyrin. If protoporphyrin can be converted directly to bile pigment without having been incorporated into red cells, one would expect to find a normal bile pigment output in these conditions. However, the pigment excretion is actually reduced sharply.

In reviewing the evidence against the maturation-arrest hypothesis, Dock,¹⁵ and Dobriner and Rhoads¹⁴ point out that the bone marrow picture in pernicious anemia differs in no essential respect from the pictures in certain anemias not caused by bone marrow defects, including hemolytic icterus, experimental saponin anemia and experimental hemorrhagic anemia. It is also pertinent that coproporphrin I excretion, an index of

bone marrow activity, increases in relapse in pernicious anemia and decreases appreciably on liver therapy just as it does in hemolytic icterus following splenectomy.¹⁴

Bile pigment excretion in pernicious anemia has been demonstrated definitely to decrease on liver treatment. This response appears during the reticulocyte shower.¹⁶ Minot and Murphy¹⁷ had previously noted that the serum jaundice cleared up before the reticulocyte shower.

In vitro studies on blood in pernicious anemia have contributed further support to the hemolytic theory. Horrall and Buchman¹⁸ showed the serum to be hemolytic. Ponder and Rhoads¹⁹ found the red cells in pernicious anemia to be less resistant than those of normal individuals to hemolysis by saponin or bile salts. In the light of the work of the Chicago investigators, emphasizing the role of absorbed fatty acids in erythrocyte destruction, it is especially significant that Zinch, Clark and Evans²⁰ reported that the serum of pernicious anemia patients counteracts hemolysis by sodium oleate (and also by saponin) less efficiently than normal serum. Our results plotted in chart 3 may have been partially due to this very effect, because in testing the fragility of untreated pernicious anemia red cells some of the patients' plasma remained with the cells tested. However, that plasma was diluted by approximately double its volume of normal plasma in carrying out the experiments.

Evidence is accumulating that liver extract acts in anemias generally by protecting the erythrocytes from excess hemolysis. Liver has been demonstrated to protect red cells against saponin hemolysis²¹ and also to be curative in the anemia produced by indole plus a deficient diet.²² It is not absolutely established that the latter is entirely a hemolytic anemia, but indole alone is known to increase red cell destruction.²³

These persistent ideas that pathologic hemolysis is a factor in pernicious anemia and that therapy is probably effective because it is antihemolytic are supported by our experimental evidence that fat ingestion injures red blood cells in untreated pernicious anemia more than in normal individuals or in treated pernicious anemia. A new significance is lent the incidental observation of Minot and Murphy¹⁷ that ". . . it seemed to us . . . that decreasing the amount of fat in the diet of the pernicious anemia patient might have a favorable effect on the state of the blood."

The evidence presented in this paper would seem to provide a basis for attempts to control or improve pernicious anemia by a diet as nearly fat free as possible.

SUMMARY AND CONCLUSIONS

1. There are several mechanisms protecting against exposure of erythrocytes to too high concentrations of injurious fatty acids and soaps. These include absorption of the products of digested fat into the lymphatics,

12. Dupee, C.; Johnson, V.; Marchello, A.; Wilner, W., and Freeman, L. W.: Stimulation of the Red Bone Marrow by Fat Ingestion in Anemic Dogs. *Federation Proc.*, 1944, to be published.

13. Whipple, G.: The Action Within the Body as Influenced by Diet. *J. M. Sc.* 175:721

14. Dobriner, K., and Rhoads, C. P.: Metabolism of Blood Pigments in Pernicious Anemia. *J. Clin. Invest.* 17:65 (Jan.) 1938.

15. Dock, W.: The Role of the Bone Marrow in the Pathogenesis of Macrocytic Anemia, in *Proceedings of the Henry Asbury Christian, Baltimore, Waverly Press, 1936*, p. 345; The Ebb and Flow of the Theories About Pernicious Anemia, *Am. J. Clin. Path.* 8:620 (Nov.) 1938.

16. Farquharson, R. F.; Borsook, H., and Goulding, A. M.: Pigment Metabolism and Destruction in Addison's (Pernicious) Anemia, *Arch. Int. Med.* 48:1156 (Dec.) 1931.

17. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, *J. A. M. A.* 87:470 (Aug. 1) 1926.

18. Horrall, O. H., and Buchman, T. E.: Hemocidal Properties of the Blood Serum with Special Reference to Pernicious Anemia, *Arch. Int. Med.* 41:482 (April) 1928.

19. Ponder, E., and Rhoads, C. P.: Red Cell Resistance to Lysins in Pernicious Anemia, *Proc. Soc. Exper. Biol. & Med.* 38:549 (May) 1931.

20. Zinch, R. H.; Clark, H. M., and Evans, F. A.: The Protective Power of Serum in Pernicious Anemia and Other Conditions Against Hemolysis by Saponin and by Sodium Oleate, *Bull. Johns Hopkins Hosp.* 32:16 (Jan.) 1922.

21. Paschke, K., and Taylor, G.: Ueber die Wirkung des antianämischen Leber-tisches bei toxischen Experimentalanämien, *Klin. Wchnschr.* 13:1538 (Oct. 27) 1934.

22. Rhoads, C. P.: Effect of Indole on Hemopoiesis in Dogs Fed Deficient Diets, *Proc. Soc. Exper. Biol. & Med.* 36:652 (June) 1937.

23. Rhoads, C. P., and Barker, W. H.: The Hemolytic Effect of Indol in Dogs Fed Normal Diets, *J. Exper. Med.* 67:267 (Feb.) 1938.

dilution of hemolysin in the thoracic duct, a slow emptying of chyle into the blood, and mixing of hemolytic chyle with large volumes of blood in the subclavian vein and heart.

2. The erythrocytes of normal man are rendered more susceptible to hypotonic hemolysis (in a standard fragility test) by exposure to lipemic serum. This constitutes further evidence that fat ingestion is one factor in the normal daily destruction of red blood cells.

3. A high fat diet in normal animals does not cause a sufficiently great increase in daily erythrocyte destruction to produce anemia. The normal bone marrow is capable of replacing these extra losses of red blood cells.

4. In untreated pernicious anemia, lipemic serum produced not only an increased erythrocyte fragility but also actual hemolysis, when lipemic serum and red cells of the same individual were mixed. By contrast, lipemic serum of adequately treated pernicious anemia patients and of normal man produced only increased fragility but no actual hemolysis of their own red blood cells.

5. On exposure to lipemic serum of a normal man, the erythrocytes of pernicious anemia patients were rendered more susceptible to hypotonic hemolysis (as revealed by a standard fragility test) than were the red cells in normal individuals, certain anemias other than pernicious anemia, and treated pernicious anemia.

6. An excessive destruction of erythrocytes by the ingestion products of fat is probably one of the etiologic factors in pernicious anemia, because of a more than normal sensitivity of pernicious anemia red blood cells to such products. A deficient plasma protection against these materials may also be involved.

Clinical Notes, Suggestions and New Instruments

INFECTIOUS MONONUCLEOSIS IN THE NEGRO

REPORT OF TWO CASES IN CHILDREN

ROSWELL D. JOHNSON, M.D., NEW HAVEN, CONN.

Since it has been stated in recent publications¹ that infectious mononucleosis affecting the Negro is limited to 1 case,² the occurrence of the disease in 2 Negro children in this clinic is of sufficient interest to warrant publication.

REPORT OF CASES

CASE 1.—History.—F. N., a 10 year old Negro boy, had one elder normal sibling. On the fourth day of life the patient acquired an intertriginous skin rash, and the Wassermann reaction of the blood on this day and two weeks later was positive (4 plus) with cholesterol antigen and negative with alcoholic antigen; the Kahn reaction of the blood was 2 plus. The tests were repeated at 2½, 6, 9 and 16 months, with negative reactions. The Kahn reaction of the mother's blood is not recorded. Roentgenograms of the long bones at 14 days of age showed no changes suggestive of congenital syphilis. Aside from these data, the past history was noncontributory.

Present Illness.—Twenty-four hours previous to his admission to the hospital the boy began to complain of sore throat, and because of inadequate home care he was admitted to the pediatric service on Sept. 27, 1941.

Physical Examination.—The temperature was 38.2 C. (100.8 F.), the pulse rate was 98 and the respiratory rate was 25. The boy did not appear to be severely ill, but his nose

was almost completely obstructed and respirations were noisy. The tonsillar lymph nodes were enlarged even to inspection but were only moderately tender. The tonsils were smooth and fiery red and met in the midline, completely obscuring the posterior pharyngeal wall. They showed no membrane on admission. The remainder of the examination showed no significant generalized glandular enlargement; the spleen was not palpable, and there was no exanthem and no jaundice.

TABLE 1.—Agglutination Test in Case 1

	Before Adsorption with Guinea Pig Kidney	After Adsorption
Hot titer.....	1:40 1+	1:320 1+
Cold titer.....	1:640 2+	1:320 1+

Laboratory Data on Admission.—The reaction to 1 mg. of tuberculin was negative; the Schick and the Kahn reactions were negative. The erythrocyte count was 4,340,000 per cubic millimeter and the hemoglobin content 12.5 Gm. per hundred cubic centimeters. The leukocyte count was 21,500, of which 62 per cent were neutrophilic polymorphonuclears (9 nonsegmented), 36 per cent lymphocytes which were characteristic of type 1 Downey cells³ and 2 per cent monocytes. The platelets were normal. The bleeding and clotting times were normal.

Course in the Hospital.—The boy's temperature rose shortly after admission and stayed between 39 and 40 C. (102.2 and 104 F.) for the next four days. During this period the throat was painful and tracheotomy seemed almost necessary at times because of the respiratory obstruction caused by the tonsillar mass. On his sixth hospital day the temperature reached normal and remained so until his discharge, on the eleventh day. On his second hospital day a slight membrane was noted on the tonsils; on the third day a slight but definite generalized glandular enlargement was observed and the spleen became palpable. These changes persisted for about five days.

On October 2 blood was drawn for a sheep cell agglutination test;⁴ the results are given in table 1.

On the day of discharge the child was greatly improved. The tonsils and tonsillar lymph nodes had regressed to a small fraction of their former size. The leukocyte count had fallen to 6,800 cells per cubic millimeter, with a differential showing 38 neutrophilic polymorphonuclears, of which 12 were nonsegmented forms, and 62 lymphocytes characteristic of Downey type 1 cells. The result of a sheep cell agglutination test was essentially the same as previously.

The boy was observed one month later with mumps and six months later because of some diminution in hearing in the left ear. Hematologic studies were not repeated.

CASE 2.—History.—G. S., a Negro girl aged 9 months, had one older sibling, and the family history was irrelevant. The family had moved to Connecticut from the South when the patient was 6 months of age. The Kahn reaction of the maternal blood was negative in this laboratory. My first contact with the patient was when she was brought to the clinic, at the age

TABLE 2.—Agglutination Test in Case 2

	Before Adsorption with Guinea Pig Kidney	After Adsorption
Hot titer.....	1:2,560 3+	1:2,560 1+
Cold titer.....	1:2,560 3+	1:2,560 1+

of 7 months, because of a rat bite on the foot. Treatment consisted in injection of antitetanus serum and repeated observation for spirochetal disease. The child was bitten on the hand by a rat one week after the first trauma. This wound was cauterized and observation continued. No systemic disease developed.

3. Downey, H., and McKinlay, C. A.: Acute Lymphadenosis Compared with Acute Lymphatic Leukemia, Arch. Int. Med. 32: 82 (July) 1923.

4. Paul, J. R., and Bunnell, W. W.: The Presence of Heterophile Antibodies in Infectious Mononucleosis, Am. J. M. Sc. 183: 90 (Jan.) 1932.

5. Stuart, C. A.; Welch, H.; Cunningham, J., and Burgess, A. M.: Infectious Mononucleosis, Arch. Int. Med. 58: 512 (Sept.) 1936.

From the Department of Pediatrics, Yale University School of Medicine, and the Children's Clinic of the New Haven Hospital.

1. Bernstein, A.: Infectious Mononucleosis, Medicine 19: 85 (Feb.) 1940. Wintrobe, M. M.: Clinical Hematology, Philadelphia, Lea & Febiger, 1942.

2. Longcope, W. T.: Infectious Mononucleosis with a Report of Ten Cases, Am. J. M. Sc. 164: 781 (Dec.) 1922.

At the age of 8 months the baby was treated in the pediatric service of the hospital for left lower lobe pneumonia; no satisfactory pathogenic organisms were isolated from the nose and throat. Response to sulfathiazole was prompt, and the child was discharged on the sixth hospital day. The Kahn reaction of the blood was negative at the time of this admission. During the ensuing month the patient was seen five times in the dispensary for rhinopharyngitis.

Present Illness.—Five days previous to her present admission the child's rhinopharyngitis became worse. The temperature rose to 39 C. (102.2 F.) and the child became increasingly fretful and was admitted because of the possibility of recurrent pneumonia.

Physical Examination.—The temperature was 40.1 C. (104.2 F.), the pulse rate 132 and the respiratory rate 56. Breathing was rapid and shallow, but the general condition was good. The throat was fiery red, with a significant amount of mucopurulent material present. Small patches were seen on the gums and on the buccal mucosa. There was no generalized glandular enlargement. The spleen and liver were not enlarged, and there was neither exanthem nor jaundice.

Laboratory Data.—The reaction to 0.02 mg. of tuberculin was negative and the Schick reaction was negative. The blood count on admission revealed erythrocytes 4,000,000, hemoglobin content 10 Gm. per hundred cubic centimeters and leukocytes 20,000. Differential count of one hundred leukocytes showed 78 polymorphonuclears, of which 12 were nonsegmented forms, 21 lymphocytes and 1 monocyte. On the seventh hospital day the total leukocyte count had fallen to 11,450, with 64 per cent poly-

TABLE 3.—Riboflavin Content of Diet in Case 2

Evaporated milk diluted half and half.....	130 micrograms per 100 cc.
Pureed carrots (canned).....	50 micrograms per 100 cc.
Pureed spinach (canned).....	105 micrograms per 100 cc.
Apple sauce (canned).....	33 micrograms per 100 cc.
Apricots (canned).....	75 micrograms per 100 cc.
Prunes (canned).....	142 micrograms per 100 cc.
White potato.....	50 micrograms per 100 cc.
Butter.....	None

morphonuclears, 28 per cent lymphocytes, 5 per cent monocytes, 2 eosinophils and 1 basophil. On the twelfth hospital day the leukocyte count was 10,850 with 44 per cent polymorphonuclears, 52 per cent lymphocytes, 2 per cent monocytes and 2 per cent eosinophils.

Unfortunately, notes were not made of the specific nuclear or cytoplasmic patterns of the lymphocytes, and the blood films were not filed for future reference. Determinations of the serologic reactions of the blood made on the first, third and seventh days showed the Kahn to be 4 plus and the Wassermann negative. Tests done on the last specimen of blood by the Connecticut Department of Health⁶ showed the complement fixation test to elicit a positive reaction and the micro Hinton a doubtful one. Cultures of material from the rhinopharynx revealed beta hemolytic streptococci and *Haemophilus influenzae*, not of type b. Culture of material from the throat yielded no pathogens. The blood was negative on culture. Two cultures of the white membrane of the mouth yielded *Monilia*. Dark field examinations of the blood showed no spirilla. Cultures of whole blood for *Spirillum minus* and *Streptobacillus moniliformis* were negative on two occasions. Agglutination tests using the patient's serum against known strains of *Streptobacillus* were made twice, also with negative results. A sheep cell agglutination test (performed largely because of an unexplained positive Kahn reaction with an oral membrane) gave the highest titer ever observed in this clinic. The results are given in table 2.

Course in the Hospital.—The patient was treated with sulfathiazole in the usual dosage. The temperature became normal forty-eight hours after her admission, except for one transient period of moderate elevation. The pharyngeal membrane continued to spread, and the voice became hoarse, which suggested laryngeal involvement. Gentian violet locally and 50 mg. of nicotinic acid by mouth were used for four days, without improvement; this was followed by one dose of 3 U. S. P. units of crude liver extract intramuscularly and 5 mg. of riboflavin

by mouth daily. Within forty-eight hours after initiation of this therapy the buccal mucosa had lost all traces of the white membrane. Because of the clinical course, ariboflavinosis was suggested as an etiologic factor for the oral lesions, but the dietary history does not support such an assumption.

Rough calculation of the riboflavin content of the diet (table 3) shows it to be well in excess of 500 micrograms, the minimum standard set by the National Research Council, Committee on Foods and Nutrition. From the age of 3 months to the present illness, at 9 months the child was fed on a basic milk mixture of evaporated milk (1 quart daily). She had had no orange juice for the preceding two months and no cod liver oil for the previous five months. From the age of 4 months, except during periods of illness, the patient had been given average amounts of pureed carrots, spinach, apple sauce, apricots and prunes (all commercially canned), as well as pabulum and white potato with butter.

The child was seen twice in the dispensary for unrelated complaints, two months and four months respectively after she was discharged; she was apparently in good general health, and the buccal mucosa was normal.

COMMENT

Case 1 is typical of certain cases of infectious mononucleosis as seen in white children. Case 2 does not present the typical systemic and hematologic picture, but in an infant this is not surprising. The extraordinarily high titer of her serum for sheep red cells and the atypically positive Kahn reaction following a negative reaction six weeks before is strong evidence for the diagnosis.

The use of the Stuart modification of the Paul-Bunnell test gives highly specific results and is of particular value in cases such as that of the girl, for whom horse serum had been used two months previously.

The exact cause of the disease has not as yet been determined, although a virus is thought to be the most probable etiologic agent; if so, it is difficult to understand why the disease should spare Negroes. It is probable that many cases have not been reported because the disease generally has an exceptionally low mortality and only a moderate morbidity, and no specific treatment has yet been universally accepted.

CONCLUSIONS

1. Two cases of infectious mononucleosis observed in Negro children are believed to be the first serologically proved cases in the literature. One previous case of the disease in a male Negro was reported by Longcope.
2. No explanation can be offered for the apparent rarity of the disease on a racial basis.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

PHENOBARBITAL (See New and Nonofficial Remedies, 1943, p. 502).

The following dosage forms have now been accepted:

BUFFINGTON'S INC., WORCESTER, MASS.

Compressed Tablets Phenobarbital: 16 mg., 32 mg. and 0.1 Gm.

WILLIAM R. WARNER & CO., INC., NEW YORK

Tablets Phenobarbital: 16 mg., 32 mg. and 0.1 Gm.

SULFADIAZINE (See New and Nonofficial Remedies, 1943, p. 169).

The following additional dosage form has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Sulfadiazine, 2½ W/V in Ethanolamines Solution (Pickrell): 8 ounce and one pint bottles. Sulfadiazine 2.5 per cent in an aqueous medium containing triethanolamine-technical 8 per cent w/v, with sodium benzoate 0.2 per cent as a preservative.

6. This test and all the sheep cell agglutinations were done by Dr. F. L. Mickle, director.

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SATURDAY, APRIL 29, 1944

REPORTS OF THE OFFICERS AND BOARD OF TRUSTEES

The reports of the officers and the Board of Trustees of the American Medical Association, which appear in the Organization Section of THE JOURNAL this week (pp. 1261-1367), constitute a remarkable record of achievement under most difficult conditions. New peaks are announced for every phase of the Association's activities. True, there was some diminution in Fellowship occasioned by entrance of Fellows into military service, but even here the reduction was minimal, and membership in the Association was actually increased. The net gain and the income from the publications of the Association rose amazingly, owing in large part to a decrease in employed personnel, to restrictions on the use of paper and to inability to replace old equipment and purchase new machinery. Nevertheless, this testifies also to the dynamic efforts of those who carried on the work of the headquarters office handicapped by lack of secretarial and other usual assistance.

The reports of all the Councils of the Association merit reading and study by every physician who has at heart the progress and welfare of medical education, medical ethics and medical science. These Councils blanket the field of medical interests and proffer their collective efforts and wisdom for the good of the people and the medical profession. The Council on Pharmacy and Chemistry (p. 1266), aided by the Laboratory, leads in the advancement of scientific treatment and has been of great help to governmental agencies in the control of unwarranted medicaments. More and more manufacturers seek voluntarily to cooperate with this Council. In the development of physical therapy the Council devoted to that field (p. 1268) has been a most important stabilizing influence. At a time when our knowledge of nutrition goes forward in ascending tempo, the Council on Foods and Nutrition (p. 1269) analyzes the available evidence and issues scientific pronouncements which guide the medical profession, industry, educational leaders and governmental bodies. The Council on Industrial Health (p. 1270) has urged

the county and state medical societies, industrial agencies and individual physicians into recognition of the importance of medicine in the great industrial expansion that marks our modern way of life.

Four of the Councils—Judicial, Medical Education and Hospitals, Scientific Assembly and Medical Service and Public Relations—report directly to the House of Delegates. The Judicial Council (p. 1300) offers some timely wisdom on medical ethics, the problem of fees for service and the questions likely to arise with the return of men now in the armed forces. The Council on Medical Education and Hospitals (p. 1301) has been intensively engaged in the difficulties created by selective service; the accelerated teaching, intern and resident programs; the evolution of medical schools; postwar medical problems, and the growth of the accessory medical technologic professions. The Council on Scientific Assembly (p. 1304) guided the development of material for THE JOURNAL in the absence of an annual session last year and now offers for 1944 a wartime assembly program that will speak for itself when the preliminary announcement is published in the near future. The Council on Medical Service and Public Relations (p. 1304) has made notable progress in completing its organization, establishing two regular bulletins, holding several important sessions and opening a Washington office.

Another technic by which the American Medical Association functions is the utilization of special committees. In this issue appear also the reports of the Committees on Wartime Graduate Medical Meetings (p. 1290), an outstanding accomplishment for extending graduate education in wartime; Air Conditioning (p. 1290); Motor Vehicle Accidents (p. 1290), and War Participation (p. 1307). There are reports of special conferences concerned with hospital practice, optometry, cultism, conservation of vision and similar subjects. Scientific research, largely dominated in wartime by the Office of Scientific Research and Development, was nevertheless also aided through the grants of the Committee on Scientific Research (p. 1204) and the Committee on Therapeutic Research (p. 1207).

The Bureaus of the American Medical Association are conducted by full time employees who have been, during this period, under unwonted stresses but who nevertheless have functioned with efficiency. The report of the Bureau of Health Education (p. 1272) reveals the innumerable public contacts made through this office with its pamphlets, radio programs, meetings and liaisons, as well as by the Bureau of Public Relations (p. 1284) through newspaper, periodical, radio and organizational relationships. The Bureau of Legal Medicine and Legislation (p. 1271) offers eight pages of analysis of congressional and other activities related to medical control. The Bureau of Medical Economics (p. 1285), burdened largely with data for the procurement and assignment of physicians for the armed forces, aided later by the liaison office from the Army Medical

Department (p. 1204), also analyzed prepayment plans and traced the evolution of medicine's own efforts to meet the problem of better distribution of medical care. The Bureau of Investigation (p. 1289) found its work diminished by activities of the post office department, which regulates abuse of the mails, the Food and Drug Administration and the Federal Trade Commission, but it cooperated with these agencies and with the Better Business Bureaus and continued its program of public enlightenment on nostrums and quackery. The Bureau of Exhibits (p. 1288), also hard pressed, made available graphic demonstrations of medical progress through constituent societies and affiliated organizations from coast to coast.

Under extraordinary difficulties the Library of the Association continued its direct services to physicians with indexes, references, package libraries and the QUARTERLY CUMULATIVE INDEX MEDICUS. From the presses of the Association rolled forth tons of scientific periodicals, representing without doubt the best available in the world today, and popular educational articles and pamphlets which were extensively reprinted in digest magazines and trade journals.

Who, reading these reports, and feeling the impact of the work they represent, can criticize unfavorably with any justice the efficiency of the American Medical Association? Its accomplishments have aroused the admiration of leaders in every other profession in this country as well as that of hundreds of visitors from most of the allied nations who have come to the headquarters during the war years. There have been some who have envied, others who would destroy, still others who would seek to change completely the character of the American Medical Association to that of an organization like a union, a commercial business or a political pressure group. Yet the founders and the leaders of the American Medical Association through the years have held steadfast to the principles enunciated in its constitution and in its ethics:

"The objects of the Association are to promote the science and art of medicine and the betterment of the public health" (Constitution of the American Medical Association, article 2).

"A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals" (Principles of Medical Ethics of the American Medical Association, chapter I, section 1).

Who, reading the reports of the officers and of the Board of Trustees can say that they have not, with diligence, with efficiency and with honor, upheld the ideals of the Association and carried out the mandates of the House of Delegates? Who, reading the reports, would wish to exchange the activities, the results and the progress of this voluntary organization of physicians, functioning as a democracy, for the iron bound regulations of commercial or labor groups, or for the wasteful futility and inefficiency of governmental bureaucracy?

THE BARUCH GIFTS FOR THE ADVANCEMENT OF PHYSI- CAL THERAPY

Elsewhere in this issue (General News, p. 1311) appears a statement concerning a gift of \$1,100,000 given by Mr. Bernard M. Baruch on April 26 to be used for teaching and research in physical medicine. Physical medicine includes, under the definition of this gift, the treatment of disease by extensive physical agents, including light, water, heat and electricity as well as by exercise and massage. Mr. Baruch appears to have been stimulated particularly to make his gift now because of the indications that physical therapy will be able to do much for the rehabilitation of the wounded and disabled who are already being released from the armed forces and who are likely to come with increasing numbers as the invasion goes on.

For some time a well qualified committee, headed by Dr. Ray Lyman Wilbur, has been studying the technic of approach to proper use of the funds which Mr. Baruch has now made available and which will no doubt be greatly supplemented in the future. Dr. Simon Baruch, distinguished father of Mr. Bernard Baruch, was himself a pioneer in this field. His name is associated with much of the progress that has been made, particularly in New York State. Because of Mr. Baruch's childhood associations in the state of Virginia and his career in New York, the institutions to which the funds are first to be devoted are the Columbia University College of Physicians and Surgeons, the New York University College of Medicine and the Medical College of Virginia. However, funds are also provided for grants to other medical schools and for the establishment of fellowships and residencies.

Thus the committee has recognized the basic importance of sound education and research to further progress in this field as in other fields of medicine. No doubt the work will be extended to some of the well recognized spas and health resorts of the United States, concerning which such excellent reports have recently been made available by the Committee on Spas and Health Resorts of the American Medical Association.

In no other field of medical science has there been, since long before the time of Hippocrates, as much difficulty in dissociating the vast mass of that which is good from a considerable portion of thought based on the will to believe and the power of suggestion. A fundamental step in the progress of this work will be the establishment of mechanisms under sound educational and well controlled auspices to separate the false from the true, the scientific from the fallacious, the honest from the fraudulent. When such reports become available they will do much to determine not only the path of future progress but also the trend of scientific medical practice.

DEFERMENT OF PREMEDICAL AND MEDICAL STUDENTS

According to the most recent directive issued by the national headquarters of the Selective Service System, preprofessional students of medicine, dentistry, veterinary medicine and various other fields will be liable to early induction into the Army if they have not matriculated and engaged in actual classroom work in schools of medicine, dentistry and veterinary medicine prior to July 1, 1944. Unfortunately this directive of the Selective Service System, issued on April 11, does not take into account the fact that acceleration of the medical curriculum, the registration of freshman classes every nine months and the varying dates on which different medical schools converted their activities from the old schedules to the wartime accelerated program have combined to change completely the dates of admission in many medical schools. Thus, one freshman class is admitted in May, another in June, two classes in July and August, twenty-one classes in September, twenty-five in October and three in November. If the directive issued by the Selective Service System on April 11 is not modified, many prospective freshmen medical students in fifty-three schools will have their status threatened. Thus far representatives of all the agencies interested in medical education have sought to obtain an extension of date to Oct. 1, 1944, but without avail.

Recently the following memorandum was circulated under the auspices of the Association of American Medical Colleges to the deans of medical schools:

After consideration of all the factors involved, it is the recommendation of the Executive Council that medical schools whose next incoming class is scheduled to begin instruction not later than next October matriculate on June 30 all civilian students accepted for that class who are under occupational deferment and assume technical responsibility for the classroom instruction in appropriate subjects, which may include courses in the premedical sciences conducted in the university, particularly in instances where students must complete their minimum premedical requirements.

Several deans have indicated that they may not follow this recommendation, since it might appear to be a direct evasion of the Selective Training and Service Act. Certainly it is unfortunate that medical education should even have to consider evasion or subterfuge in order to maintain continuity of medical education during the war.

A recent conference of the Surgeons General of the Army, the Navy and the Public Health Service with the Procurement and Assignment Service brought forth emphatic agreement that some means of providing an uninterrupted flow of medical students is fundamental to the nation's health and welfare. The indeterminate attitude of the War Manpower Commission on this question has served to interfere seriously with the morale of medical students and teachers, and with the quality of medical education.

Enough has been said in the press and elsewhere to indicate that a critical shortage of physicians now exists and that an adequate schedule for replacement is a national necessity. Since the beginning of the Selective Service program, the status of professional students has been continuously a matter of doubt. Is it not possible to secure assurance of deferment? If not, the War and Navy departments will do well to secure through those departments some type of inactive or reserve status for qualified premedical and medical students. Unless a continuous flow of medical graduates can be assured, every one at all interested will have to take the matter directly to the Congress and the President.

Current Comment

LIMITED PENICILLIN FOR CIVILIAN USE

Under the direction of the War Production Board the manufacture of penicillin has been greatly increased in the past year. While the needs of immediate military and OSRD war research must always necessarily be met first, the board now finds that a limited supply is available for restricted use in civilian medical practice. Assisted by an advisory panel, the board is formulating a plan for a controlled but equitable distribution of some of the drugs throughout the entire United States. Details of the program will be announced shortly in *THE JOURNAL*. The War Production Board and the collaborating drug manufacturers are to be commended for their achievements in developing production and for the intelligent and fair manner in which limited distribution for civilian needs is being planned.

HOSPITAL CARE FOR MOTHERS

Only a few years ago critics of the medical profession were charging that a large percentage of births received inadequate medical attendance. In 1935 records of the type of such attendance were obtained for the first time. The Bureau of the Census has recently issued a special report entitled "Live Births by Person in Attendance: United States, 1942, March 24, 1944." This shows a steady and rapid increase in the percentage of births attended by a physician in hospitals—from 36.9 per cent in 1935 to 67.9 per cent in 1942. The number attended by physicians not in the hospital declined in the same period from 50.6 per cent to 24.7 per cent. The percentage of births attended by midwives has fallen from 10.7 per cent to 7.0, and those attended by "other and not specified" from 1.8 per cent to 0.4 per cent. In the states of Iowa, Kansas, Massachusetts, Nebraska, New Hampshire, Ohio, Pennsylvania and Vermont and in the District of Columbia approximately 100 per cent were attended by physicians. The Southern states and especially the races other than the white race afford the only examples where more than 50 per cent of the births did not have a physician in attendance.

MEDICINE AND THE WAR

ARMY

ARMY MEDICAL DEPARTMENT ESTABLISHES CIVIL PUBLIC HEALTH DIVISION

Major Gen. Norman T. Kirk, the Surgeon General of the Army, has announced the establishment of the Civil Public Health Division as a new organization with its principal function the formulation of policies and the development of plans for public health programs in occupied and liberated territories during the military phase of future operations.

The division, part of the Preventive Medicine Service under Brig. Gen. James S. Simmons, will be under the immediate direction of Col. Thomas B. Turner, M. C., who has just returned from an extensive tour of the European and Mediterranean theaters of operations, where such programs are now functioning or are in the planning stage.

The program already under way will integrate the public health activities of the Army overseas with that of other agencies in this field, including the U. S. Typhus Commission, the Navy, the U. S. Public Health Service, the United Nations Relief and Rehabilitation Administration and other national and international health organizations.

The Allied armies will be called on to assume a measure of responsibility for civilian public health in many areas, entailing supervision of or liaison with local public health officials and the provision of certain necessary medical supplies.

To accomplish this objective it will be necessary to commission from civil life a number of officers experienced in public health administration and in specialties such as nutrition, maternal and child health, public health engineering and laboratory techniques.

Men who have had both general and special training in one or another of these special fields are being sought for such assignments in the Far Eastern area. They should not be over 50 years of age and should be physically qualified to perform at least limited service duties overseas. Previous military experience and knowledge of foreign languages is desirable but not essential.

The men selected will undergo a course of training at the School of Military Government, Charlottesville, Va., and thereafter in one of a number of civilian universities not yet designated. Instruction will include the theory and general principles of military government and liaison, and the language and background of certain Far Eastern areas. In addition provision will be made for training men in special phases of public health and certain medical specialties.

Further information may be obtained by addressing the Surgeon General, U. S. Army, Washington 25, D. C., attention Civil Public Health Division.

PRAISE LITTER BEARERS ON FIFTH ARMY FRONT

The War Department recently announced that litter bearers on the Fifth Army front, who evacuate the wounded to first aid stations, where they receive life giving plasma, are saving many lives and reducing appreciably the extent of casualties. These unarmed "medics" disregard enemy shells, mines and booby traps and ignore fatigue and discomfort in carrying out their missions. Often the first aid stations are several miles from the point where casualties are picked up, and in extremely mountainous terrain and in weather which makes the precipitous trails most hazardous, bearers often average from twelve to eighteen hours carrying a single patient. Stretchers must be kept perfectly level when bearing the seriously wounded. To accomplish this in rugged terrain takes the efforts of at least six bearers.

Typical of first aid detachments is the medical battalion commanded by Lieut. Col. Frank P. Pipia, Medical Corps,

Brooklyn. Under the supervision of Capt. James L. Rounds, Medical Corps, Chicago, the battalion's litter bearers did a remarkable job in evacuating the wounded from the mountains in the Cassino sector, where stiffened enemy resistance resulted in heavy casualties. Ambulances and jeeps could get no closer than 7 to 10 miles of the wounded. Relay stations were set up at intervals, and volunteers from armored and antiaircraft units helped the medics carry the wounded over the slippery mountain trails. Captain Rounds described the feat of one of his men, Corporal James Bowers, of Shelbyville, Mo., who rescued eight wounded infantrymen within sight of the enemy. Corporal Bowers, with seven litter bearers, reached the advanced outpost after an all night climb. He raised his Red Cross flag and with his men in full view of the enemy marched out to get the wounded. Fortunately in this instance the Germans withheld their fire and the wounded were successfully evacuated. "The medical detachments are filled with men like Bowers," Captain Rounds asserted. "Those men are accomplishing heroic missions almost every time they go up. Artillery and mortar shelling, as well as mines and booby traps, are constant dangers. The other day I met one of my noncoms who had just spent several days in a sector under severe artillery attack. When I asked how things were going up there he replied casually 'Just the usual shelling, sir.'" Captain Rounds urged the use of the term "combat medics" for these front line litter bearers. "The medics," he said, "are not considered combatants because they do not carry rifles, but I believe they should be known as 'combat medics' because they share all the dangers and discomforts of infantrymen."

ARMY WARNS AGAINST BOGUS AID FOR BLINDED SOLDIERS

The War Department recently issued a warning to the public to be on guard against fraudulent solicitation of funds based on pleas for aid to blinded soldiers. Despite the fact that the Army Medical Department has announced that thus far 73 men have suffered total blindness in this war, medical officers have reported circulation of misinformation and rumors that there are thousands of blind casualties. Several hoaxes already have been detected. In one instance in a West Coast city three blind men, none of whom ever had been in the military service, were represented in a newspaper story as veterans who had been blinded in action against the Japanese in the South Pacific. The blind men did not know that they were to be described as ex-soldiers and repudiated efforts to use them as pawns in the scheme. In two states, on two occasions, funds have been solicited on the strength of representations that the money collected would be used for training and care of the blind.

The Army Medical Department gives complete care to blind soldiers and retains them in hospitals until they have received the maximum benefit from their treatment, including reeducation and training for adjustment to civil life. Guide dogs are furnished to those who want them. Reputable guide dog agencies are cooperating in exposing efforts to hoax the public, and these legitimate organizations have furnished or have offered to furnish guide dogs for the nominal charge of one dollar or gratis to veterans needing them. The Surgeon General's Office estimated that only about 10 per cent of blinded servicemen will need or want guide dogs. Some blinded persons learn to use a cane skilfully and thus can get about less conspicuously and without the encumbrance of a dog. Medical officers have found that a blinded soldier should not, under any circumstances, have a dog until he has become as independent and self reliant as possible.

Blinded veterans are at present being cared for at the Valley Forge General Hospital, Phoenixville, Pa., and the Letterman General Hospital, San Francisco.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

RELOCATION OF PHYSICIANS

From January 1942 to Feb. 29, 1944, 2,955 relocations of physicians to new localities of practice were effected, according to an announcement made by Dr. Frank H. Lahey, chairman of the directing board of the War Manpower Commission's Procurement and Assignment Service. Dr. Lahey estimated that the total in March would be approximately 250.

Since 1942, through March 31, 1944, state chairmen of Procurement and Assignment Service have reported 510 areas as being critically short of medical personnel. Of these areas the needs for medical personnel were met in 281 communities, or 55 per cent of the critical areas. Relocations were effected in 135 of these communities, and the needs of 146 were met "by other means." Dr. Lahey explained that among the methods included in the phrase "by other means" were inducing retired physicians to resume active practice, changes in types of medical practice and "freezing" of medical personnel in civilian communities by Procurement and Assignment Service classification as "essential."

The needs of 185 communities have not yet been met. In 166 areas there appears at present to be no solution, and only temporary or partial solutions have been effected in 16 areas. It was explained that "temporary or partial" solutions include temporary deferments of men otherwise available for military service, temporary relocations and the utilization of part time physicians from neighboring areas.

The main difficulties in the way of permanent solutions for some communities are to be found in such factors as the following, Dr. Lahey pointed out:

1. To a large extent, relocations must be effected within the various states themselves because of restrictions in medical licensure laws which prohibit outside physicians from practicing.

2. There is a serious problem involved in finding qualified older physicians who are not already firmly established and who are willing to move to other areas where their services are needed.

3. It is sometimes difficult to find physicians who, although they are otherwise qualified, are acceptable to local communities.

As a cross section of communities whose medical facilities have been hard hit by the war and for whom no solution has yet been found, Dr. Lahey called attention to the following:

1. Mobile, Ala., first reported to the Procurement and Assignment Service as being a critical area on Oct. 26, 1942.
2. Key West, Fla., first reported on Jan. 29, 1943.
3. Vallejo, Calif., first reported on March 18, 1943.
4. Velasco, Texas, first reported on Jan. 14, 1943.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, April 22, page 1210)

FLORIDA

Orange General Hospital, Orlando. Capacity, 263; admissions, 4,475. Mr. C. DeWitt Miller, Superintendent (1 intern).

ILLINOIS

Mercy Hospital, Chicago. Capacity, 360; admissions, 7,701. Sister Mary Redempta, R.N., Superintendent (1 intern).

Mount Sinai Hospital, Chicago. Capacity, 280; admissions, 7,576. Dr. Stephen Manheimer, Director (resident—July 1).

IOWA

Mercy Hospital, Cedar Rapids. Capacity, 179; admissions, 3,862. Sister Mary Mercy, R.N., Superintendent (interns, residents).

Broadlawns, Polk County Hospital, Des Moines. Capacity, 174; admissions, 2,823. Mr. T. P. Sharpnack, Administrator (interns—July 1, October 1).

LOUISIANA

Shreveport Charity Hospital, Shreveport. Capacity, 788; admissions, 11,116. Dr. Edgar Galloway, Superintendent (3 interns, resident, pathology—October 1).

NEBRASKA

Lincoln General Hospital, Lincoln. Capacity, 213; admissions, 4,574. Mr. Robert B. Witham, Administrator (interns).

NEW YORK

Brooklyn Eye and Ear Hospital, Brooklyn. Capacity, 143; admissions, 6,893. Mr. Henry J. Williams, Superintendent (residents, otolaryngology—1944-45).

Queens General Hospital, Jamaica, L. I. Capacity, 696; admissions, 9,925. Dr. Henry I. Fineberg, Superintendent (residents, otolaryngology, contagious, July 1; assistant resident, urology, pediatrics—October 1).

New York Post-Graduate Medical School and Hospital, New York City. Capacity, 409; admissions, 8,622. Dr. William B. Talbott, Superintendent (resident, urology—July 1).

Highland Hospital, Rochester. Capacity, 266; admissions, 5,249. Dr. George B. Landers, Director (3 interns—September).

OHIO

Grant Hospital, Columbus. Capacity, 313; admissions, 8,624. Mr. Erwin C. Pohlman, Superintendent (interns).

Miami Valley Hospital, Dayton. Capacity, 445; admissions, 12,484. Mr. O. K. Fike, Director (3 interns, 1 resident—October 1).

TEXAS

El Paso City-County Hospital, El Paso. Capacity, 211; admissions, 2,973. Dr. A. H. Butler, Superintendent (2 interns—August 1).

All Saints Episcopal Hospital, Fort Worth. Capacity, 100; admissions, 3,997. Miss Eva M. Wallace, R.N., Superintendent (2 general residents—1 now, 1 in August).

MISCELLANEOUS

AWARDS FOR OUTSTANDING CONTRIBUTIONS TO THE REHABILITATION OF THE WAR INJURED

Four awards of \$1,000 each were presented on April 20 for outstanding contributions to the Rehabilitation of the War Injured at the Lord and Taylor Seventh Annual American Design Awards luncheon at the Waldorf-Astoria. Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, was guest speaker. Walter Hoving, president of Lord and Taylor, made the presentations. The recipients were:

Lieut. Col. Howard A. Rusk, M. C., formerly of St. Louis and now chief of the Convalescent branch in the Office of the Air Surgeon, for his program of convalescent reconditioning now in effect throughout the country. His program prepares the patient both mentally and physically for recovery, so that he is able to return to combat or enter into productive civilian life.

Lieut. Col. James Barrett Brown, M. C., formerly of St. Louis and one of the founders of the American Board of Surgery, for his work on plastic surgery. Dr. Brown was made chief of

Plastic Surgery at the Valley Forge General Hospital in May 1943.

Lieut. Col. Roy R. Grinker, M. C., and Major John P. Spiegel, M. C., jointly for neuropsychiatry. Dr. Grinker was formerly head of psychiatry at the University of Chicago and director of neuropsychiatry at Michael Reese Hospital, Chicago. At present he is chief of Professional Services and Psychiatry at the Don Ce-Sar Convalescent Center set up by the Air Forces. Dr. Spiegel, a former pupil of Dr. Grinker's, was resident in psychiatry at the Michael Reese Hospital, Chicago, and left in 1942 for active service in the Army Air Force. He was sent to Africa with the invasion of that continent in November 1942 and worked with Dr. Grinker.

Capt. Henry H. Kessler, M. C., formerly of Newark, N. J., as representative of the Navy program for orthopedic rehabilitation. Dr. Kessler served as medical director of the New Jersey Rehabilitation Clinic from 1919 to 1941, at which time he entered active service. He is well known for the development of an artificial arm and accompanying operation which utilizes live muscles left in the stump, thus affording the patient muscular and coordinative control of the artificial limb.

ORGANIZATION SECTION

REPORTS OF OFFICERS

NOTE.—At the 1925 session of the Association, the House of Delegates suggested that all reports of officers, committees, etc., and resolutions to be brought before the House, if available, be published in advance of the session so as to permit careful consideration and discussion—Ed.

REPORT OF THE SECRETARY

To the Members of the House of Delegates of the American Medical Association

The following report of the Secretary is respectfully submitted

MEMBERSHIP

On Dec 31, 1943 the official membership list of the American Medical Association carried the names of 123,586 members. During the year the names of 2,019 deceased members were removed. There was a net gain of 1,876 over the number of enrolled members as of Dec 31, 1942.

Because a reapportionment of delegates is made every third year based on the number of members recorded on April 1 of the reapportionment year, it has been customary to report annually the enrolment as of that date. On April 1, 1944, 124,452 members were enrolled. On the corresponding date in 1943 the recorded membership was 122,741.

It appears that many young physicians recently graduated were accepted into the armed service as medical officers and were assigned to duty before they had opportunity to affiliate as members of component county medical societies and constituent state and territorial associations and have therefore not qualified as members of the American Medical Association.

It also appears that an undetermined number of component county medical societies have closed their membership books for the duration of the war. Whether or not such action has been taken by resolutions adopted or under specific provisions of constitutions and by-laws is not known to your Secretary.

An accompanying table shows, with respect to each state, the number of counties, the number of component county medical societies, the number of counties in which no societies are now organized, the number of physicians as shown by the Seventeenth Edition of the American Medical Directory, the number of members as reported by the constituent state and territorial medical associations on April 1, 1944 and on April 1, 1943 and the number of Fellows in each state and territory.

On Dec 31, 1943 the names of 70,269 Fellows appeared on the Fellowship roster, while on the same date in 1942 the enrolment of Fellows was 73,453. During the year, 931 deaths of Fellows were reported. The names of 186 Fellows were removed from the roster because of ineligibility, 342 were dropped because of nonpayment of dues and 4,169 Fellows resigned. Most of those who resigned were Fellows who had accepted commissions as medical officers and had been assigned to active duty with the military forces.

As of April 1, 1944 the number of enrolled Fellows was 69,304. On April 1, 1943 the enrolment was 72,851. The decrease in Fellowship has not been as large as was expected. Some of the loss has been made up by the enrolment of new names.

PROPOSED AMENDMENT TO THE CONSTITUTION,
ARTICLE 6, SECTION 3

Dr. Arthur S. Risser, delegate of the Oklahoma State Medical Association, submitted the following resolution, in which amendment of the Constitution, article 6, section 3 is proposed to the House of Delegates at its annual meeting in Chicago in 1943. In accordance with the provisions of the Constitution and By-Laws, this proposed amendment will be before the House of Delegates for action at the 1944 session.

WHEREAS, The American Medical Association is composed of the fifty-four constituent state and territorial medical associations, and

WHEREAS, Twenty-two of these state associations lie west of the Mississippi River and are considered more or less rural states where

Organization of Constituent State and Territorial
Medical Associations April 1, 1944

	Number of Counties in State	Number of Com- ponent Societies in State	No. of Counties in State Not Organized		No. of Physicians in State 17th Ed Directory	No. of Members of State Associations		Number of Fellows in State
			1943	1944		1943	1944	
Alabama	67	67			2,123	1,591	1,560	416
Arizona	14	1	1	1	615	390	390	250
Arkansas	71	58	11	0	1,896	1,070	1,098	42
California	58	40	6	10	12,365	7,314	7,530	3,229
Colorado	61	27	1	1	1,886	1,151	1,175	687
Connecticut	8	8			1,937	1,937	2,011	1,661
Delaware	3	3			260	245	243	12
Dist. Columbia					4,400	924	947	70
Florida	67	34	17	16	2,331	1,429	1,429	1,006
Georgia	159	92	7	7	2,814	2,003	2,014	815
Idaho	44	9			446	20	319	171
Illinois	102	92	6	6	12,948	8,557	8,623	4,006
Indiana	92	81	1	1	4,160	3,441	3,797	1,604
Iowa	99	97			1,102	2,446	2,407	1,114
Kansas	105	72	18	16	2,042	1,609	1,687	858
Kentucky	120	112	8	4	2,717	1,889	1,949	759
Louisiana	64	42	11	10	2,601	1,351	1,567	88
Maine	16	16			1,011	751	757	245
Maryland	2	2			3,085	1,397	1,635	1,044
Massachusetts	14	18			6,080	5,642	5,525	2,777
Michigan	83	33			6,507	4,410	4,897	2,229
Minnesota	87	74	1	1	3,614	2,945	2,976	1,330
Mississippi	82	21			1,521	97	920	40
Missouri	114	78	8	8	6,118	244	3,252	1,757
Montana	36	17	22	22	536	143	437	206
Nebraska	91	30	16	16	1,637	1,147	1,110	616
Nevada	17	5	11	12	174	124	114	74
New Hampshire	10	10			687	346	340	266
New Jersey	21	21			1,008	4,178	4,294	3,471
New Mexico	31	14	17	17	447	272	268	17
New York	62	61	1	1	27,938	18,624	18,908	10,111
North Carolina	100	67	24	24	3,871	1,912	1,942	994
North Dakota	33	1	11	11	320	408	399	130
Ohio	88	87	1	1	9,496	6,728	6,762	457
Oklahoma	77	6	6	6	2,284	1,104	1,149	716
Oregon	36	28	2	1	1,490	924	982	484
Pennsylvania	67	60	6	1	1,380	9,992	9,911	5,347
Rhode Island	5	6	1	1	958	61	755	26
South Carolina	46	7	4	4	1,127	92	911	451
South Dakota	69	12	1	1	49	39	41	188
Tennessee	95	57	24	24	2,961	1,706	1,811	804
Texas	254	126	2	2	6,999	4,928	4,907	2,118
Utah	14	9	4	4	518	481	500	270
Vermont	10	10			518	81	78	184
Virginia	100	52	8	8	2,920	1,822	1,868	1,257
Washington	69	24	1	1	2,704	1,647	1,614	912
West Virginia	31	0			1,804	1,707	1,832	610
Wisconsin	71	52			3,551	2,787	2,637	1,576
Wyoming	24	11	11	11	77	191	190	101
Alaska	5	1	1	1	95	41	34	108
Hawaii					181	12	240	2
Canal Zone					400	1247	1,147	47
P. I. (provinces)	7	7			17	40	470	67
Puerto Rico								9
Foreign								
<hr/>								
	1,179	2,004	541	47	18,960	123,741	124,452	61,606
Commissioned medical officers								4,698
								19,904

the problems of medicine and public health are different from those of the industrial states, now, therefore, be it

Resolved, That the house of delegates of the Oklahoma State Medical Association instruct its delegates to introduce the following amendment to the Constitution of the American Medical Association:

Amend article 6, section 3, by adding the following language:

"After the adoption of this amendment, the House of Delegates shall elect at the earliest possible time at least three Trustees from the states west of the Mississippi River, and all appointments to fill unexpired terms of these Trustees shall be from states west of the Mississippi River and that this ratio of members shall at all times be retained."

MEMORIALS AND RESOLUTIONS

No memorials or resolutions have been submitted for inclusion in the Handbook of the House of Delegates, though attention has been directed to a number of resolutions adopted by component societies and constituent associations, which, presumably, will be submitted to the House by delegates.

VISITORS AND CORRESPONDENCE

The number of members of the Association who visit its offices is constantly increasing, and it is with much pleasure that this fact is reported to the House of Delegates. All who come are invited to visit the offices of all the councils, bureaus and departments and to make such inquiries as they may be disposed to make. Many have taken full advantage of the opportunity to learn at first hand something of the nature and scope of the activities of the Association.

Many physicians of other countries have similarly honored the Association and, until very recently, there has been a continuous increase in the number of such visitors.

The number of lay visitors is constantly growing. Pupils of schools, college students, teachers and members of civic groups are among our visitors and seem to be interested in what they see and hear in reply to their inquiries.

On numerous occasions the facilities available at the Association's building have been utilized by both professional and lay groups for official meetings of such groups. In all instances those in attendance have been given full opportunity to observe the activities of the various departments and to familiarize themselves with the aims and objects of the Association in relation to the promotion of the art and science of medicine and to public service.

The volume of correspondence that pours into the Association's offices, aside from that coming from physicians, is very large and is constantly increasing. Effort is made to offer helpful replies to all inquiries, the nature of which is almost unbelievably varied, as are the sources from which they come.

Activities incident to the matters referred to in this section of the report of the Secretary represent an important part of the work of the Association in the field of public relations.

IN APPRECIATION

The Secretary offers to the members of the House of Delegates, to the officers and the members of official bodies of the Association, to officials of state and county medical societies and to many individual members of the Association an expression of his heartfelt thanks for their kindly consideration and aid. Especially does he wish to express to his associates of the administrative personnel and other loyal and faithful employees his grateful appreciation. They have carried on in the face of difficulties in a manner that deserves high commendation.

Respectfully submitted.

OLIN WEST, Secretary.

REPORT OF THE BOARD OF TRUSTEES

To the Members of the House of Delegates of the American Medical Association:

Income and Expenditures

The official Reports of the Treasurer and Auditor are appended as a part of this report of the Board of Trustees.

Examination of the figures presented will reveal that income from all sources in 1943 was larger than in any previous year, and that the excess of income over expenditures was far larger than ever before. The net gain in 1943 was \$718,873.76, exceeding the net gain reported in 1942 by the sum of \$388,458.42. This remarkable increase in income over expenditures was the result of unexpectedly large receipts on various accounts. Income from Fellowship dues and subscriptions to THE JOURNAL was greater by the sum of \$19,497.08; advertising receipts of THE JOURNAL increased by \$159,494.08, and

receipts from the sale of advertising space in the Association's periodical publications aside from THE JOURNAL showed a gain over 1942 of \$38,546.94; income from the sale of books, reprints and sundry items produced a gain of \$26,064.27; interest on investments was greater in 1943 than in the previous year by \$8,261.50, and the gain of income over expenditures from Association periodicals other than THE JOURNAL was \$72,231.81. Income from subscriptions to all of the Association's publications, exclusive of Fellowship dues, was larger in 1943 by the sum of \$47,302.35.

Along with the remarkable gain in various income items there were rather significant reductions in expenditures incident to the operation of various councils, bureaus and committees and of some departments. Such expenditures were less in 1943 than in 1942 by the sum of \$35,078.61, and sundry expense items including legal expense were \$21,395.91 less than in the preceding year. The cost of paper used in the production of the Association's periodical publications was reduced in 1943 as compared with similar costs in 1942 by the sum of \$42,002.54. Total wages and salaries paid in 1943 were less than in 1942 by \$122,369.95. Significant reductions were recorded in expenditures for postage, supplies and building maintenance, while there were increased expenditures for ink, commissions and cash discounts.

The foregoing detailed information is included in this report in explanation of the remarkable gain in net income in 1943. While it became necessary to adjust salary and wage schedules upward, the reduction in expenditures for these purposes was considerable in amount because of the serious depletion of personnel. Had it been possible to secure adequate personnel, the outgo for salaries and wages would have been rather radically increased. Smaller expenditures for paper were occasioned by the action of official agencies of the federal government whereby rather severe restrictions were placed on paper supplies, compelling the utilization of paper of less weight than had previously been used and radically reducing the total amount of paper allotted for the Association's use. Under normal conditions rather large expenditures would have been made for machinery and other equipment, but this has not been available because of conditions created by the war. Other supplies that would normally have been purchased have not been on the market for the same reason. The Board of Trustees has set up a reserve of \$300,000 to be used for the purchase of new machinery and for the replacement of parts of old machinery that will still be usable when properly repaired.

Summary

Income from all sources in 1943 was larger than in any previous year, and the excess of income over expenditures was larger than ever before. The net gain in 1943 was \$718,873.76, exceeding the net gain for 1942 by the sum of \$388,458.42. This remarkable increase was the result of unexpectedly large receipts on various accounts, including Fellowship dues and subscriptions by the sum of \$19,497.08, Journal advertising receipts by \$159,494.08 and advertising receipts from the Association's periodical publications by \$38,546.94, the sale of books and reprints and sundry items by \$26,064.27 and interest on investments by \$8,261.50. Income from subscriptions to all of the Association's publications, exclusive of Fellowship dues, was larger than in 1942 by the sum of \$47,302.35.

Along with the gain in various income items there were significant reductions in expenditures incident to the operation of various councils, bureaus, committees and departments, such expenditures being \$35,078.61 less in 1943. Legal expense also was less by the sum of \$21,395.91, the cost of paper was \$42,002.54 lower and total wages and salaries were less than in 1942 by the sum of \$122,369.95.

The reduction in the amount of wages and salaries paid was due to the depletion of personnel, and the smaller expenditures for paper were occasioned by the restrictions placed on its use by the federal government. Under normal conditions rather large expendi-

tures would have been made for new machinery and other equipment and supplies. The Board of Trustees has set up a reserve of \$300,000 to be used for this purpose when such material is available.

Group Life Insurance and Retirement Annuity Plan

For several years it has been apparent to the members of the Board of Trustees that it would be desirable and even necessary for the Association to initiate a plan under which retirement annuities could be provided for the benefit of the Association's employees. This necessity has been accentuated by conditions growing out of the global war.

The Board of Trustees, after lengthy consideration, has entered into a contract with a long-established insurance company which provides for group life insurance and for retirement annuities. The cost of the retirement annuity plan is borne by the Association and its employees who are eligible under the terms of the contract. The plan provides for the payment of annuities to all eligible employees at the age of 65. New employees will be eligible to participate in the plan after the first six months of continuous employment. The amount of annuity will be based on the employee's length of service and earnings and will include current service annuity purchased during service after April 1, 1944 and past service annuity purchased for service before April 1, 1944 in accordance with specific provisions of the contract pertaining to annuity payments. The cost of past service annuity for employees who entered the plan on April 1, 1944 and who on that date have completed at least one full year of continuous service after attaining the age of 35 will be borne by the Association, while contributions by the employees and by the Association will be used each year to purchase current service annuity.

Group life insurance is provided for all employees.

Within a relatively short period of years, retirement annuity plans have been put into effect by practically all large industrial and commercial employers as well as by philanthropic and scientific organizations, and this practice has no doubt contributed toward the establishment of incentive for continuous employment by efficient and loyal employees and has enabled employers to make provision toward insuring at least some degree of financial security for faithful workers in their nonproductive years.

Employment

At one time in 1941 there were 678 persons in the employ of the Association. In 1943 the number of employees had dwindled to slightly more than 500. As this report is being prepared there are approximately 515 persons on the Association's employment list, a considerable number of whom are replacements. Practically every department has suffered severely for lack of needed personnel, and the difficulties involved in securing replacements appear to be increasing rather than diminishing.

The Association has attempted to comply with federal and state laws pertaining to employment and with regulations promulgated by administrative agencies. Forty-two members of the Association's working personnel have been assigned to active duty with the military forces, while several others have failed to qualify for such service largely because of minor physical defects. At least one of the group assigned to active duty has been decorated for meritorious performance, while most of the others have been promoted in rank.

The Journal of the American Medical Association

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION continues to be recognized as the leading general publication in its field. The aim of THE JOURNAL has been to present material regarding scientific advancement in medicine, reports of official bodies of the American Medical Association, editorial discussions of problems affecting various aspects of medical science and medical care, and the medical news of the world.

The exigencies of war have interfered greatly with the receipt of material which normally would have come from corre-

spondents to THE JOURNAL in other countries. Nevertheless, advantage has been taken of the opportunity to enlist new correspondents from South American nations and to develop those sections of THE JOURNAL devoted to the war service of the medical profession and to the activities of government agencies.

As of Dec. 31, 1942, 103,692 names appeared on the mailing list of THE JOURNAL, while on Dec. 31, 1943, there were 108,452

TABLE 1.—Approximate Count of Fellows and Subscribers on The Journal Mailing List Jan. 1, 1944, Showing Gain or Loss

States	Fellows	Subscribers	Totals	Gain	Loss
Alabama.....	588	378	966	..	27
Arizona.....	286	166	452	..	17
Arkansas.....	385	228	613	..	58
California.....	4,754	3,846	8,600	1,054	..
Colorado.....	625	373	998	..	33
Connecticut.....	965	734	1,699	25	..
Delaware.....	114	87	201	..	..
District of Columbia.....	733	914	1,637	273	..
Florida.....	915	577	1,492	..	12
Georgia.....	741	631	1,372	..	50
Idaho.....	158	106	264	13	..
Illinois.....	3,642	3,248	6,890	..	113
Indiana.....	1,459	793	2,252	9	..
Iowa.....	1,013	431	1,444	..	36
Kansas.....	762	333	1,095	..	38
Kentucky.....	672	417	1,089	..	123
Louisiana.....	780	558	1,338	17	..
Maine.....	317	182	499	..	10
Maryland.....	940	900	1,840	131	..
Massachusetts.....	2,521	1,757	4,278	..	123
Michigan.....	2,027	1,643	3,670	137	..
Minnesota.....	1,200	689	1,889	..	8
Mississippi.....	367	295	662	..	15
Missouri.....	1,598	1,008	2,606	44	..
Montana.....	188	105	293	6	..
Nebraska.....	560	342	902	67	..
Nevada.....	68	42	110	9	..
New Hampshire.....	242	108	350	..	29
New Jersey.....	2,188	1,407	3,595	..	164
New Mexico.....	158	126	284	19	..
New York.....	9,254	7,211	16,465	1,134	..
North Carolina.....	994	741	1,735	99	..
North Dakota.....	178	93	271	..	5
Ohio.....	3,170	1,576	4,746	..	295
Oklahoma.....	651	343	994	24	..
Oregon.....	442	433	875	3	..
Pennsylvania.....	5,043	3,042	8,085	..	2
Rhode Island.....	324	186	510	..	47
South Carolina.....	445	315	760	..	50
South Dakota.....	171	128	299	17	..
Tennessee.....	777	621	1,398	138	..
Texas.....	2,108	1,380	3,488	3	..
Utah.....	254	173	427	35	..
Vermont.....	168	78	246	..	1
Virginia.....	1,125	675	1,800	..	16
Washington.....	902	615	1,517	60	..
West Virginia.....	555	291	846	..	7
Wisconsin.....	1,251	652	1,903	..	62
Wyoming.....	92	50	142	..	16
U. S. Army.....	..	2,016	2,016	1,452	..
U. S. Navy.....	..	1,500	1,500	800	..
U. S. P. H. S.....	..	152	152	48	..
Alaska.....	28	29	57	3	..
Canada.....	13	1,010	1,023	199	..
Cuba.....	6	286	292	42	..
Hawaii.....	104	169	273	..	22
Mexico.....	9	255	264	55	..
Panama.....	32	42	74	..	29
Philippine Islands.....	..	..	..	..	..
Puerto Rico.....	61	95	156	3	..
Virgin Islands.....	1	3	4	..	2
Foreign.....	56	2,176	2,232	215	..
Advertisers and agents.....	..	..	219	..	69
Exchanges.....	..	..	168	15	..
Complimentaries.....	..	..	97	..	10
Total on mailing list.....			108,452	6,249	1,480

names on this list, which included subscribers, exchanges, advertisers, subscription agents and others. The circulation of THE JOURNAL in 1943 was larger than ever before, as was the income received from subscriptions and the sale of advertising space. The weekly average of copies of THE JOURNAL printed in 1943 was 105,324.

Included in this report is the usual table showing the number of Fellows and the number of subscribers other than Fellows in each state, and the gain or loss in circulation. A second

table indicates the number of physicians in each state, the number receiving THE JOURNAL and the approximate percentage of subscribers in each state.

It may be of interest to the members of the House of Delegates to know that in 1900 there were 8,445 Fellows and 4,633 subscribers other than Fellows carried on the mailing list of THE JOURNAL, while in 1943 the names of 59,030 Fellows and 48,820 other subscribers appeared on this list. It is to be remembered that several thousand Fellows of the Association substitute special journals for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION in connection with Fellowship.

TABLE 2.—Percentage of Physicians Receiving The Journal *

State	Number Receiving Journal	Physicians in A. M. Directory	Approximate Percentage Receiving Journal
Alabama.....	966	2,123	46
Arizona.....	402	615	65
Arkansas.....	617	1,806	34
California.....	8,000	12,365	70
Colorado.....	938	1,886	53
Connecticut.....	1,699	2,720	62
Delaware.....	201	360	56
District of Columbia.....	1,637	4,540	36
Florida.....	1,492	2,391	62
Georgia.....	1,372	2,814	49
Idaho.....	264	446	59
Illinois.....	6,890	12,548	55
Indiana.....	2,252	4,165	54
Iowa.....	1,444	3,102	47
Kansas.....	1,095	2,042	54
Kentucky.....	1,080	2,717	40
Louisiana.....	1,368	2,601	53
Maine.....	499	1,011	49
Maryland.....	1,840	3,085	60
Massachusetts.....	1,278	8,085	53
Michigan.....	1,670	6,509	56
Minnesota.....	1,889	3,614	52
Mississippi.....	662	1,525	43
Missouri.....	2,686	5,181	52
Montana.....	293	536	55
Nebraska.....	902	1,637	65
Nevada.....	110	174	63
New Hampshire.....	350	687	51
New Jersey.....	3,595	6,008	60
New Mexico.....	284	417	64
New York.....	16,465	27,928	59
North Carolina.....	1,645	2,871	57
North Dakota.....	271	520	52
Ohio.....	4,746	9,406	50
Oklahoma.....	994	2,284	44
Oregon.....	875	1,493	59
Pennsylvania.....	8,085	13,503	60
Rhode Island.....	510	958	53
South Carolina.....	760	1,427	53
South Dakota.....	299	491	61
Tennessee.....	1,398	2,961	47
Texas.....	3,488	6,952	50
Utah.....	427	585	73
Vermont.....	246	551	45
Virginia.....	1,800	2,920	62
Washington.....	1,517	2,214	68
West Virginia.....	816	1,834	46
Wisconsin.....	1,907	3,571	54
Wyoming.....	142	267	54

* This table gives the number of physicians (based on the Seventeenth Edition of the American Medical Directory) in the United States, the number receiving THE JOURNAL and the approximate percentage in each state. Copies to physicians in the United States Army, Navy and Public Health Services are not included.

Summary

The Journal of the American Medical Association continues to be recognized as the leading general medical publication. War conditions have interfered greatly with receipt of material from foreign correspondents, but advantage has been taken of opportunities to enlist new correspondents from South American countries and to develop those sections of The Journal devoted to war service of the medical profession and activities of government agencies.

The circulation of The Journal in 1943 was larger than ever before, as was the income received from subscriptions and the sale of advertising space. There were 108,452 names on The Journal mailing list on Dec. 31, 1943, of which 59,030 were the names of Fellows of the Association.

Special Journals

The high quality of the nine special scientific journals published by the Association was maintained in 1943, although the number of pages in all but one of these periodicals was curtailed about one third during the second half of the year. The number of pages was reduced in order that official demands of the War Production Board restricting the use of paper might be complied with and in anticipation of a considerable reduction in the amount of material available for publication. In order that paper supplies might be conserved, publishers were urged by the War Production Board to reduce the number of illustrations used.

The ARCHIVES OF OPHTHALMOLOGY presented fourteen colored plates during the year, while one or more such plates appeared in some of the other special journals. Part of the expense incurred in reproducing these colored illustrations was borne by the Association and part by the authors of the articles with which the illustrations were used.

There were two special numbers of the ARCHIVES OF SURGERY, one in honor of Dr. Robert B. Osgood and the other presenting a symposium on gastric cancer which comprised twelve separate articles. The special number in honor of Dr. Osgood comprised thirty-four illustrated articles contributed by his former associates. A complete review of orthopedic surgery and the usual trimonthly reviews of urologic surgery were printed in the ARCHIVES OF SURGERY in 1943. The review of orthopedic surgery has been prepared by an editorial board of the American Academy of Orthopedic Surgeons, and there has been a considerable demand for reprints of these articles. The Chief Editor of the ARCHIVES OF SURGERY, Dr. Waltman Walters, has been on active service as a medical officer of the United States Navy during the entire year, and Dr. Lester R Dragstedt, a member of the Editorial Board, has acted as Chief Editor pro tem.

The publication in the ARCHIVES OF INTERNAL MEDICINE of reviews of the literature on a number of subjects has been continued, although it has become somewhat difficult to secure preparation of such articles because many of those who have undertaken the task in the past are in active service with the armed forces or are heavily burdened with work because their associates have been called to active duty.

A series of articles on the effects of radiation on normal tissues by Dr. Shields Warren, publication of which was begun in 1942, was completed in the ARCHIVES OF PATHOLOGY in 1943.

WAR MEDICINE, which was published bimonthly in 1942, was made a monthly periodical in 1943, and the number of pages was increased slightly in order to give early publication to material of timely importance. Articles on occupational therapy were printed in WAR MEDICINE during the year and have since been reproduced in book form.

Only one of the nine special journals was published at a loss in 1943, and in that one instance the loss sustained was less than half the loss recorded in 1942. Income derived through the publication of this group of journals exceeded cost by the sum of \$47,451.06.

The total circulation of the special journals in 1943 was in excess of that in 1942 by 2,710. In the case of only one of these journals was there a decrease in circulation, and that was very slight in amount.

Summary

The high quality of the nine special scientific journals published by the Association was maintained in 1943, although the number of pages and of illustrations was curtailed about one third during the latter half of the year in order to comply with demands of the War Production Board restricting the use of paper. War Medicine, published as a bimonthly in 1942, was made a monthly periodical in 1943 in order that early publication might be given to material of timely importance in connection with the war effort.

Only one of the special journals was published at a loss in 1943, and income derived from the publication of the whole group exceeded cost by the sum of \$47,451.06. The total circulation of the special journals in 1943 exceeded that of the preceding year by 2,710 copies.

Library

The periodical lending service offered by the Library of the American Medical Association lent 9,641 separate issues of periodicals in 1943. This number is lower than that of 1942 because greater restrictions were placed on the lending of foreign periodicals. As it is now impossible to replace periodicals published in Axis controlled countries, fewer such items are included in package libraries. They were included only when other material was not available on a requested subject.

More than 2,200 package libraries were lent to members and to subscribers of the publications of the American Medical Association. The majority of the requests came from Illinois, New York, California, Indiana and Pennsylvania. Approximately one half of the requests for service came from physicians and students in the various military services of the United States. The subjects most frequently requested during the year were military medicine, industrial and occupational diseases, pneumonia (virus or atypical), anesthesia, aviation medicine, sulfonamides, burns, tuberculosis and blood transfusion. As usual, the Library answered hundreds of miscellaneous reference questions.

Indexes for the three volumes of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* published in 1943 were prepared in the Library.

The Employees' Library, which has been maintained for many years, was discontinued during the year owing to a shortage of personnel.

Quarterly Cumulative Index Medicus

There was some increase over 1942 in the number of foreign articles indexed in the *QUARTERLY CUMULATIVE INDEX MEDICUS* for the year 1943. In 1940, 26,614 articles from foreign publications were included in the *INDEX MEDICUS*. In 1942 the number of such foreign articles available for indexing dropped approximately 50 per cent to 13,424. Of this number 64 per cent of the articles were indexed from Spanish and Portuguese journals. In 1943, 16,525 articles from foreign periodicals were indexed. Fifty-four per cent of this total were from Spanish and Portuguese journals.

About 1,860 articles from microfilms of periodicals published in Axis controlled countries were indexed. During the year a few German periodicals covering the year 1942, which were ordered in 1941 through the Joint Committee on Importations of the American Library Association, were received. The first shipment arrived in July 1943, and a smaller one followed a few weeks later.

About 168 periodicals, mostly foreign publications, were dropped during the year from the list of journals indexed in the *QUARTERLY CUMULATIVE INDEX MEDICUS*. Many titles of periodicals have been retained in the list, even though issues have not been received for three years. The staff of the *INDEX* has been greatly reduced, and unprecedented delays in publication have occurred because of the shortage of personnel.

The net loss sustained through the publication of the *QUARTERLY CUMULATIVE INDEX MEDICUS* in 1943 was \$19,784.97, approximately \$7,500 less than in 1942. This reduction in the costs of publishing and distributing the *INDEX* was most largely due to the forced reduction in the size of the volumes printed in 1943 because of the unavailability of material from foreign countries. If and when the normal flow of such material is resumed after the war, it is practically certain that the costs involved in the production of this publication will be very considerably larger.

Hygeia, the Health Magazine

The scope and influence of *HYGEIA* have multiplied increasingly in recent years, so that this magazine is now truly an official source book of education for the public concerning health and disease. Articles that have appeared in *HYGEIA* have been frequently quoted, and a number of them have been reproduced in such leading publications as the *Reader's Digest*, *Magazine Digest* and *Science Digest* and other similar magazines. Its articles and editorials have formed the basis for widespread

comment in newspapers in various parts of the country, and a number of the articles and pictures have been included in textbooks, some having been selected not only for textbooks in the field of science but as models in the field of writing. Contributors to *HYGEIA* include some widely reputed writers.

During the past year special consideration of the interests of the blind and the deaf, as well as concise statements regarding advances in medical science, have been covered by articles that have been published in *HYGEIA*.

Advertisers have recognized the importance of representation in *HYGEIA*, so that the demand for advertising space has on some occasions been greater than could be met because of restricted paper allotments.

The average net paid circulation per month in 1943 was 115,846 copies, but toward the end of the year there was a decrease in the total number of subscribers. Because of a lack of paper, it was not possible to maintain the usual effort to procure new subscribers, with the result that the number of subscriptions secured through direct mail solicitation was smaller than in 1942. This loss was largely overcome as a result of an increased number of subscriptions secured through subscription agencies and part time subscription agents.

Income derived from subscriptions and from the sale of advertising space in the columns of *HYGEIA* was larger than the expenditures involved in its publication during 1943 by the sum of \$52,758.79.

American Medical Directory

Because of the evident impossibility of procuring necessary office personnel and the unsettled conditions growing out of the war, it will be necessary to postpone the preparation and publication of the Eighteenth Edition of the American Medical Directory. In the meantime diligent effort will be made to maintain the records kept by the Directory Department so that the valuable information provided may be available for present and future purposes.

The entire issue of the Seventeenth Edition has been exhausted. Income received from sales in 1943 was large enough to reduce the loss reported last year by approximately \$6,300.

Order and Mailing Department

The total number of orders handled by the Order Department during the year covered by this report was 64,858, approximately 8,500 less than in the preceding year. The total number of units distributed was 375,465, representing an increase of slightly more than 20,000.

One hundred and fifty tons of stock room mail were sent out, and more than 560,000 pieces of "metered" letter mail, not including thousands of letters mailed directly from various departments during the year.

Cooperative Medical Advertising Bureau

The Cooperative Medical Advertising Bureau in 1943 had its most successful year. The earnings of the Bureau amounted to \$55,802.46, representing a gain of a little more than \$13,000 over the preceding year. A complete financial statement was submitted to each cooperating state journal.

The gross advertising secured through the Bureau for the twelve months ended Nov. 30, 1943 amounted to \$246,837.10. The cost of operation of the Bureau amounted to \$13,539.83. The amount of commissions returned to the cooperating journals at the end of the year was \$35,800, which was, of course, in addition to the regular monthly payments made to each of the participating journals.

At a meeting attended by most of the editors and business managers of the state medical journals, held in Chicago in June 1943, some dissatisfaction with the operations of the Cooperative Medical Advertising Bureau was expressed. This matter was brought to the attention of the Board of Trustees and, in compliance with a request emanating from those who were present at the conference referred to, two additional members, Dr. Stanley B. Weld of Connecticut and Dr. E. M. Shanklin of Indiana, were added to the membership of the Advisory

Committee to the Cooperative Medical Advertising Bureau. This committee has had two meetings, the first of which was somewhat informal in character. At the second meeting, which was attended by all members of the Advisory Committee and two members of the Board of Trustees, plans were considered for making some changes in operating methods, and it was decided that the Advisory Committee should have three official meetings each year.

Council on Pharmacy and Chemistry

The Council on Pharmacy and Chemistry has entered its fortieth year of service to the medical profession and to the public. This body, which consists of scientists of outstanding repute, has been responsible for more progress in promoting and establishing rational therapeutics than has any other body. Its members serve earnestly and unselfishly, without remuneration, and always with thought of the Council motto "*Non sibi sed Medicinæ*" (Not for itself but for Medicine). The Council's contributions in the field of drug therapy during 1943 assured continued recognition of its leadership.

THE COUNCIL AND THE WAR EFFORT

The Council has continued to provide its services and findings for prosecution of the war effort. In addition to supplying information to members of the medical profession and other scientific groups, the Council has cooperated with governmental agencies, regulatory and advisory, made available standards and statements of actions and uses for drugs used in the armed forces, in industry and in civilian practice and has issued general status reports to aid in applying the newer knowledge of the treatment of certain diseases. The Council office, the Council members and consultants have been called on repeatedly to answer questions on therapeutic procedures, pharmacology, toxicology, nomenclature and drug substitutes.

Several individuals formerly with the Council office are in active service with the armed forces. Two of these are physicians. Another, who was an office assistant, recently received the award of the Legion of Merit. One Council member is on active service abroad and has been relieved of all Council duties until his return. Practically all the members serve on one or more special committees of the central bodies which are directing the war effort.

PROFESSIONAL RELATIONS

The Council continues to enjoy cooperative relationship with many agencies of the federal government and with other bodies, and it supplies information and other assistance whenever possible; included are the Army, Navy, U. S. Food and Drug Administration, Federal Trade Commission, U. S. Public Health Service, War Production Board, National Research Council, Office of the Alien Property Custodian, Federal Bureau of Investigation, Better Business Bureaus, Council on Dental Therapeutics and others.

The Council has maintained relations with representatives of the American Pharmaceutical Association and of several other associations and societies to promote helpful understanding of problems of mutual interest. Increasing use of the Council's facilities by medical groups has been encouraged whenever possible. In spite of the war the Council office received many visitors, a number of these being from countries in Central and South America. It seems that several of the Latin American countries may create organizations similar to the Council when the time seems propitious. Visitors are encouraged to return and to correspond freely.

The Council has continued to be of assistance to all other departments and has supplied much information and help. During the year a cooperative committee was formed by the Council on Pharmacy and Chemistry and the Council on Industrial Health to consider the preparation of a formulary designed for use in industry.

The Secretary of the Council attended several meetings of other groups to represent the Council, present its views and carry back useful information. Most of these meetings concerned topics of vital concern to the Council, and attendance by a Council representative was most profitable for all participating bodies.

The Council is receiving an increasing number of requests from newspapers and radio broadcasting companies concerning advertising claims directed to the public. Much help has been provided on this score, which undoubtedly accounts for increasing calls. Such cooperation is in the interest of public welfare and is encouraged heartily by the Council.

PUBLICATIONS

The distribution of Council sponsored publications during 1943 reached a new peak. During the year over 46,000 copies of New and Nonofficial Remedies, Useful Drugs, Epitome of the U. S. P. and N. F., Annual Reprints of the Reports of the Council and Glandular Physiology and Therapy were distributed. Of this number New and Nonofficial Remedies comprised 20,000 copies (half of these were distributed free to medical students of recognized schools). The total number of copies of New and Nonofficial Remedies distributed during 1943 was greater by 8,000 than that in 1942. The total distribution of Council publications during 1943 represented an increase of more than 100 per cent over 1942 and nearly 200 per cent over preceding years. It is felt that part of this increase is due to general improvements in the books, especially in N. N. R., and to a systematic attempt to bring these books to the attention of the medical profession. Some increase is due to the accelerated medical education plan and to purchases by the armed forces. Nevertheless it is hoped that this peak will be maintained and even surpassed in the future.

The figures for 1943 bring up to 426,000 the number of publications sponsored by the Council which have been distributed over the last twenty-one year period. Included in this figure are 185,000 copies of N. N. R., of which about 85,000 have been complimentary paper-bound copies issued to students in recognized medical schools. These figures do not include publications for which the Council is not solely responsible, for example, the A. M. A. Intern's Manual and The Vitamins.

RESEARCH

In addition to initiating and sponsoring research resulting from certain phases of problems facing the Council in its considerations, the Council maintains a Committee on Therapeutic Research, which considers applications for research grants. During 1943 twenty-three grants, ranging from \$125 to \$800, were issued by this committee. Thirty-eight articles have been published during the year as a result of work done under Therapeutic Research grants. The number of grants that have been issued since the formation of the committee in 1911 is 515. Many of these grants have aided research of extremely important nature which has contributed greatly to better knowledge of the prevention and treatment of disease. In other instances the sums covered only a small part of the total cost of the research project.

EDUCATIONAL ACTIVITY

In addition to the preparation of status reports, standards and statements of actions and uses of new drugs, the editing of several books and other duties, the Council and its office attempt to acquaint the medical profession and others with the Council's work and to provide information that is intended to aid in improving the health of the public, even though this information may not fall directly within the Council's prescribed considerations. To this end, exhibits on endocrinology, chemotherapy and tropical diseases are being prepared, and when they are completed they will be available for loan from the Association's Bureau of Exhibits. During the year the Secretary addressed twenty audiences on varied subjects and appeared on the radio for interview on thirteen occasions. Several of the radio appearances were recorded and will be reproduced elsewhere on local stations. Council members also provided addresses in their respective fields before widely scattered audiences. Many of the members made original contributions in public health, materia medica and educational fields.

The Council gave permission to the authors of several textbooks to use certain portions of New and Nonofficial Remedies. This publication is being quoted widely in books on drugs and therapeutics.

REPORTS ON DRUGS

The Council adopted for publication about thirty reports, consisting in part of statements concerning the use of aminophylline and related xanthine derivatives, ampuls of camphor, treatment of vaginitis associated with *Trichomonas vaginalis*, antiseptics and their criteria for evaluation, dosage and labeling of vitamin preparations, human convalescent measles serum and scarlet fever serum, local use of the sulfonamides in dermatology, organotherapy with a concentrated organic iodine solution, oral use of the sodium salt of sulfonamides, external use of cod liver oil, amphetamine sulfate in the control of obesity, estrogens in the palliative treatment of prostatic carcinoma, and massive doses of vitamin D in the treatment of refractory rickets. Several other statements deserve special mention: The Council presented a report reviewing the history and advantages of the metric system, ending with the statement that from now on the dosages in Council sponsored publications will appear only in the metric system, although conversion tables will be provided in each book for those who are not familiar with this system. Another very important and widely received report presented a review of the nomenclature of endocrine preparations. This was intended to dispel confusion regarding the identity of many of these agents which are sold under proprietary and nonrevealing names. Many requests for reprints of this article have been received. At the request of the Subcommittee on Venereal Diseases of the Committee on Medicine of the National Research Council and the Committee on Drugs and Medical Supplies, the Council prepared and published a report on the status of dichlorophenarsine hydrochloride, an antisiphilic agent. It also sponsored a complete article on conception control and adopted criteria for the evaluation of contraceptives which are now being considered by the Council on the same basis on which this body considers other drugs.

The Council adopted for publication twelve monographs on new drugs and accepted for inclusion in New and Nonofficial Remedies approximately 220 drugs submitted by various manufacturers. This involved a consideration of almost 500 dosage forms and dosages. The Council also gave partial consideration to many other therapeutic agents but did not complete action because of insufficient data, submission of products late in the year or at the request of the manufacturer pending further investigation. Further, the Council reviewed the status of a number of official agents which have been included in New and Nonofficial Remedies for some years but the individual brands of which could be deleted because of the general knowledge which exists on these products. However, in each instance adequate statements of actions and uses and dosage will remain in New and Nonofficial Remedies and will be revised each year when the book is revised, or more often if indicated, so that members of the medical profession, manufacturers and advertising agencies may have ready access to claims which are considered acceptable by the Council.

EXPEDITING COUNCIL CONSIDERATION

During the past year a number of changes have been effected in Council procedure so that consideration of submitted drugs may be expedited and final action accomplished more quickly. It is felt that this streamlining will reduce to a minimum occasional complaints that the Council moves too slowly. Any prolonged delays from now on will be due entirely to failure of the manufacturer to submit adequate evidence or to effect requested revisions, or to the independent investigation of certain claims by actual trial in the laboratories or clinics of the Council members and their associates. Although the manufacturer is supposed to assume the responsibility of submitting adequate proof to support his claims, it is occasionally necessary for a Council referee to subject the product to actual trial to ascertain the validity of one or more of the claims. The Council members assume a grave responsibility in declaring a product acceptable or nonacceptable and they demand that the necessary data for careful consideration be available; this serves as protection to the physician, the public and the manufacturer.

The office personnel has again decreased in number during the year. It has been impossible to fill most of the vacancies because of lack of adequately trained persons. Nevertheless,

by each individual assuming greater duties and by streamlining Council considerations it has been possible to increase the output of work even with the decreased personnel.

MEMBERSHIP

Dr. William C. Rose, who has been a member of the Council for seven years, was forced to resign because of the pressure of other duties. It was with great regret that Dr. Rose's resignation was accepted, because his contributions to the Council work have been many and invaluable. Dr. Eugene M. Landis, professor of physiology, Harvard Medical School, who is well known for his contributions to science, was elected to fill Dr. Rose's unexpired term.

During the year Dr. Austin E. Smith, Secretary of the Council, and Dr. Elmer L. Sevringhaus were appointed to membership on the U. S. P. Endocrine Products Advisory Board.

ANNUAL MEETING OF THE COUNCIL

During October the Council held its annual meeting. The topics discussed and actions taken included the formation of a committee to report on standards for parenteral solutions; preparation of a report on the treatment of "Vincent's angina" and the role in which the physician and dentist may play a part; limitation of multiple dose vials for parenteral administration which are likely to show significant contaminating bacterial proliferation; status of the official liver, stomach and digitalis preparations; formation of a committee to prepare several articles for the medical profession to explain the work of the Council; granting a request from an Argentine society for a Spanish translation of *Glandular Physiology and Therapy*; disadvantages of the use of mineral oils in foods; status of globin insulin, and the status of the Council's rules. The Council also gave consideration to limiting the dosage sizes of vitamins to be accepted in New and Nonofficial Remedies, adopted an improved form for presentation of articles to the Council, authorized the expenditure of funds for sterility tests on submitted products where the need seems indicated and reviewed the status of combined diphtheria toxoid and tetanus toxoid preparations. Other considerations included an invitation to two authorities to prepare for the Council a status report on the use of *Haemophilus pertussis* vaccine and human hyperimmune pertussis serum, the variations that are taking place in the contents of submitted drug preparations, apparently because of speeded up manufacturing programs, and the responsibility of manufacturers to notify the Council of errors in the manufacture and marketing of their Council accepted products. While these and the other topics discussed are of importance even in normal times, some of them assume added importance during wartime.

Summary

The Council on Pharmacy and Chemistry has entered its fortieth year of service to the medical profession and to the public. During 1943 the Council continued to be of material aid to those who are engaged in the prosecution of the war effort, and its facilities were called on for many and varied projects.

Relations with representatives of other organizations and other countries were furthered and encouragement given to increasing collaboration. Such mutual consideration is of much aid in solving problems of common interest. Of special note is the increasing frequency with which those who are in charge of advertising copy for newspapers and radio programs are turning to the Council for guidance.

The distribution of Council publications reached a new peak during the year with a total of 46,000 copies. This represents an increase of more than 100 per cent over the preceding year.

Twenty-three grants for research were issued, bringing the number of grants issued since 1911 up to 515.

New exhibits are being prepared on endocrinology, chemotherapy and tropical diseases and will be available for loan when completed. During the year the Secretary addressed twenty audiences and appeared for thirteen radio interviews. Some of these interviews were recorded for reproduction over other stations.

Thirty status reports and twelve monographs on new drugs were adopted for publication. The Council completed consideration on about 220 drugs submitted by various manufacturers and gave partial consideration to many others.

Council procedure has been changed to expedite considerations and permit conclusions to be reached more quickly. In view of these changes any prolonged delays from now on will be due entirely to failure of the manufacturer to submit adequate evidence and other information, or to independent investigation initiated by the Council to ascertain the validity of certain claims.

Dr. William C. Rose was forced to resign as a member of the Council because of pressure of other duties. Dr. Eugene M. Landis was elected to fill the unexpired term. Drs. Austin E. Smith and Elmer L. Sevringhaus were appointed to membership on the U. S. P. Endocrine Products Advisory Board.

At its annual meeting the Council discussed many topics, some of these being of special importance in time of war. A number of actions which will contribute to public welfare and rational therapeutics will result from these considerations.

The Chemical Laboratory

During 1943 the Chemical Laboratory continued to serve the medical profession as it has for over thirty-seven years. The work of the Laboratory throughout the year was primarily concerned with the chemical consideration of medicinal products for the Council on Pharmacy and Chemistry. Reports of the Council published in *THE JOURNAL* and articles from the Laboratory make available information concerning the identity, purity and strength of new chemotherapeutic agents.

The Laboratory maintained careful scrutiny of a large number of dosage forms of drugs submitted to the Council on Pharmacy and Chemistry by manufacturers. In some instances serious discrepancies between the labeling and the actual contents were found. In every such case, notification of the manufacturer resulted in prompt cooperation through recall of the substandard article from the market and the institution of adequate methods of product control. A published contribution from the Laboratory aided in calling attention to the presence of hydrocarbons in some nonboilable surgical gut tubing fluids.

In addition to many other products examined in 1943, the Laboratory was called on to assist in the elaboration of tests and standards by means of which uniformity in composition and action of newer therapeutic agents may be assured. Consideration was given to tests and standards for such substances as sulfamerazine and sulfapyrazine and their sodium salts—sulfamerazine sodium and sulfapyrazine sodium; diodoquin, aldarson, octofollin, anthralin, globin insulin with zinc, propylene glycol, zinc insulin crystals, metacucil, premarin, mercurin and dymixal. The Laboratory served in connection with the revision of New and Nonofficial Remedies, 1943 and devoted much time to the provision of chemical information in reply to correspondence and to problems of nomenclature.

The Laboratory cooperated with the Bureau of Investigation in the examination of a number of products marketed to the public. In this connection the analysis of several cold permanent wave preparations was performed.

The Laboratory has aided the Library staff in the classification of various substances under proper chemical designations and has been of assistance to the advertising committee and to other departments of the Association by means of technical advice.

The Chemical Laboratory continues to enjoy cooperation with the laboratories of the American Dental Association, the U. S. Food and Drug Administration and many manufacturers in the consideration of chemical problems of drug standardization.

Summary

The Chemical Laboratory of the American Medical Association has continued its important work for the Council on Pharmacy and Chemistry in the examination and standardization of medicinal products offered to the

medical profession and has aided other departments of the Association. Cooperation with governmental agencies, professional groups and manufacturers has been continued.

Council on Physical Therapy

Developments incident to the great world war have given impetus to further advancement in the field of physical therapy. Methods of proved value increasingly are being employed for the rehabilitation of persons injured in combat and in industrial pursuits, and new procedures are being developed. Occupational therapy is playing a major role in the rehabilitation program of the armed services and industry. The Council on Physical Therapy believes that its critical evaluation of physical and occupational therapy during the past eighteen years has vitally influenced the development of the field.

There has never been such a shortage of trained physicians and qualified technicians as now exists in the field of physical therapy.

The restrictions placed on raw materials have caused the manufacturers of physical therapy equipment to limit the development of new therapeutic and diagnostic devices. In some instances manufacturers sell their entire output to the armed forces or to the government for lend-lease purposes. Others have converted all of their resources to the fabrication of the materials of war. For these reasons fewer appliances have been submitted to the Council, and investigations of apparatus have been greatly curtailed. However, the Council has not been idle. Many problems have been studied that do not necessarily involve the use of apparatus. In fact, the Council believes that most of physical therapy consists in the application of exercise, heat and massage and the intelligent management of the patient. Several members of the Council have been engaged in reviewing the entire field of physical therapy and in studies that may make it possible to offer recommendations for initiating new projects in research and for the improvement of present methods of practice. This year the Council voted to consider contraceptive devices.

PUBLICATIONS

The Manual of Physical Therapy, a booklet which describes the applications of physical therapy agents and is especially prepared for wartime consumption, has entered its second printing. The Manual of Occupational Therapy, which was completed during the year, is now being reprinted. The latter publication was prepared in cooperation with the American Occupational Therapy Association and the Subcommittee on Rehabilitation of the National Research Council.

Members of the Council have been actively engaged in one or another phase of the war effort, and the assumption of such new duties has interfered with the revision and improvement of the Handbook of Physical Therapy. A number of the chapters are still not completed. The booklet Apparatus Accepted, which contains the names of accepted products and their manufacturers, has been revised and is ready for distribution.

Twenty-eight articles approved by the Council appeared in *THE JOURNAL* during the year.

ARTIFICIAL RESPIRATION

During the year the subject of artificial respiration received considerable attention from the Council. Reports on research and investigations concerning resuscitation have netted valuable information. The fourth year progress report of the five year survey of all methods for artificial respiration, both manual and mechanical, as used in emergency conditions has been reviewed. The accumulated information thus gathered from research, investigations and surveys reaffirms the Council's stand concerning the acceptance or rejection of devices for administering mechanically artificial respiration. It is the considered opinion of the Council that every competent person should know how to give artificial respiration by an approved manual method. Critical evidence indicates that the first five minutes of complete anoxia are the most important, and artificial respiration should be administered within this period if any great hope of survival of the patient is to be expected. The chances of survival are considerably lessened if artificial respiration

is applied later. Even though a mechanical appliance for giving artificial respiration has been proved efficacious if applied within the five minute period, it is certainly of no value to the asphyxiated victim if it is fifteen minutes away from the scene of the accident. This is one reason the Council has endorsed for many years the instructional program of the American Red Cross concerning manual methods of artificial respiration.

COUNCIL CONSULTANTS

Physical therapy embraces so many specialized fields that one body of twelve men can scarcely be expected to have critical and authoritative information on all problems that are presented to it. The Council is fortunate, therefore, in having groups of consultants who give their services gratuitously, as do the Council members, and advise on the problems arising in specialized fields.

Education.—Proper instruction and training of the physical therapy technician are of paramount importance. The Council has cooperated with the Council on Medical Education and Hospitals in revising the curriculum for schools for physical therapy technicians. The American Physiotherapy Association and the American Registry of Technicians of the American Congress of Physical Therapy have contributed valuable assistance. With the aid of the Consultants on Education, the Council has reviewed the physical therapeutic measures currently employed, and the results of this study are available to civilian, army and navy physicians through a set of stereopticon slides together with a syllabus. Designed for use at wartime medical meetings, these slides are available to physicians who may be directing classes or who participate in programs of scientific meetings. Information on this service may be obtained by writing to the Secretary of the Council.

Audiometers and Hearing Aids.—Manufacturers of hearing aids have continued to receive limited amounts of raw materials. With the help of its Consultants on Audiometers and Hearing Aids, the Council has pursued its examination of hearing aids and has published reports.

The Consultants are anticipating the development of postwar problems in the field of hearing and especially those created by combat and industrial injuries. The testing of the hearing of the school child has also received considerable attention.

The Council on Physical Therapy greatly appreciates the cooperation and advice it has received from such organizations as the American Academy of Ophthalmology and Otolaryngology, the American Otological Society, the American Laryngological, Rhinological and Otological Society and the American Society for the Hard of Hearing.

Ophthalmic Devices.—Devices to be considered by this group of consultants are as follows: charts for testing vision and muscle balance, charts and instruments for orthoptic training, apparatus for applying heat to the eyes, diagnostic instruments of an optical nature and special or tinted lenses for which specific therapeutic claims are made.

The Council on Physical Therapy is grateful to its Consultants, who have rendered most valuable aid on so many occasions.

ULTRAVIOLET RADIATION FOR DISINFECTING PURPOSES

Careful study has been given to the use of ultraviolet radiation for disinfecting purposes. The Council published a statement declaring its stand on the acceptance of ultraviolet lamps for this purpose entitled "Acceptance of Ultraviolet Lamps for Disinfecting Purposes." The Council will consider for acceptance ultraviolet lamps for use in operating rooms, clinics and cubicles in hospitals when such places are under the direction of qualified persons. The Council does not accept lamps claimed to be useful for sterilizing solids and liquids. The acceptance applies only to the disinfecting of air under controlled conditions. Hence, apparatus for which it is claimed that diseases caused by cross infection are eliminated or reduced when such apparatus is installed in public gathering places, waiting rooms, physicians' offices, theaters and the like will not be retained on the accepted list.

Summary

The Council on Physical Therapy during the war emergency has devoted most of its energies to reevaluation of physical therapeutic measures and to making this information available to the profession in civilian and military service. Unavailability of raw material and curtailment of production have restricted greatly the Council's consideration of apparatus.

The Manual of Physical Therapy and the Manual of Occupational Therapy have been reprinted. The booklet *Apparatus Accepted* has been revised. During the year, twenty-eight articles adopted by the Council were printed in *The Journal*.

Artificial respiration, both manual and mechanical, has been reviewed carefully by the Council. Its study and findings have confirmed the Council's previous stand. The Council's study of basic, tried and approved therapeutic measures is summarized in a set of slides designed for use at wartime medical meetings. Hearing aids and ultraviolet lamps for disinfecting purposes were devices that received attention during the year.

Council on Foods and Nutrition

During the year 1943 the Council on Foods and Nutrition has continued to exert its influence to encourage the production of high quality foodstuffs and insure fair representation of these foods to the public. In pursuit of this objective numerous food products have been considered by the Council with a view to acceptance, but as the year progressed the number of such submissions declined. This is felt to be due in part to the limitations placed on food supplies as a result of the war and perhaps more so to the change in Council policy determined on at the July meeting. It was decided that the Council limit its consideration of foods to special purpose foods, defined as those promoted for the use of population groups in relation to growth and development, and to those foods which because of their public health significance merit Council attention. The use of the Seal of Acceptance will be continued in connection with such foods. Producers of all other accepted foods, considered as general purpose foods, have been notified of this action of the Council and requested to discontinue use of the seal after a stipulated period of time.

With this lessening in activity with respect to consideration of individual food products, it is the desire of the Council to extend its activities in the field of nutritional education. It is proposed to do this in part by developing a closer working arrangement with groups which are devoting themselves to research and education in the field of nutrition. These are in particular the organizations which are more and more being set up by various branches of the food industry and those governmental agencies charged with supervision of the nation's food and nutrition. Through the medium of Council reports, opinion will continue to be expressed on points of nutritional significance, keeping the physician and allied workers abreast of new developments and clarifying old principles.

COUNCIL REPORTS

Several reports on topics of interest have been published this year. One served to point out the dangers of fat soluble vitamin loss which can occur as a result of the indiscriminate use of liquid petrolatum in certain foods and as a laxative. Council acceptance was withdrawn from those Council accepted food products which include liquid petrolatum as an ingredient.

The practice of enriching white flour, first advocated by the Council in 1939, was made compulsory for all bakers' white bread by governmental order in January 1943. The nutritive contribution made by enriched white flour to the average American diet was brought out in a special Council report. It was shown that the average diet in which enriched white flour is used along with small amounts of skim milk solids maintains a reasonably satisfactory nutritional status, whereas with the exclusive use of ordinary white flour in such a diet definite symptoms of thiamine deficiency develop.

With the increasing interest in enrichment of grain products it was deemed worth while to make a comparative study of the vitamin content of the many prepared cereal products now on

the market. Such a study was undertaken under a research grant from the Board of Trustees of the American Medical Association and a preliminary report covering the analyses of some sixty cereal products and the grains from which they are made has been published.

HANDBOOK OF NUTRITION

Publication of the planned series of articles in *THE JOURNAL* covering important nutritional topics was successfully completed. These articles were subsequently resubmitted to the authors for any revision or additions that might be necessary to include the latest information available on the subject and then the twenty-five articles were brought together, reedited and prepared for publication as the *Handbook of Nutrition*. This volume was ready for distribution at the end of the year.

VITAMINS—REVISION OF FOOD CHARTS

At the July meeting it was decided that many of the values indicating nutrient content of foods as shown in the pamphlet *Food Charts* were no longer accurate in the light of most recent data. It was voted to revise this booklet to include the latest information and this has been done, so that this popular booklet will be available shortly in revised form.

Note was taken of the wide variance in vitamin C content of different brands of canned citrus fruit juices and tomato juice. It was recognized that these variations are mainly due to growth conditions and processing methods. The Council hopes to determine on an optimal vitamin level for these canned juices at which the producers can aim, as a measure to increase the nutritional value of this food.

To assist in clarifying the vitamin statements carried on food containers it was decided to urge a uniform system of stating vitamin content on labels of cereal products with the hope of extending this plan later to other types of foods.

The increasing tendency to add vitamins to various types of food products, making foods such as milk and candy (with the exception of vitamin D in milk and vitamin A in margarine) carriers of vitamins, is not looked on with favor by the Council. On the other hand fortification of certain processed foods with vitamins or minerals to restore these substances to their natural level in the untreated food is considered a desirable nutritional practice. The Council took occasion to reaffirm its stand on the question of supplemental vitamins, namely that the vitamins which are so necessary for the maintenance of health should be obtained from the food eaten and not from capsules.

COOPERATION WITH OTHER COUNCILS

As a part of the program of the fifth Annual Congress on Industrial Health, a Symposium on Nutrition in Industry was presented in cooperation with the Council on Industrial Health. Topics of pressing interest in this field were discussed by nutritional authorities. Following the normal presentations a round table discussion was held.

The Council has been endeavoring to secure information on certain specific questions concerning nutrition in industry which have been brought to it by the Council on Industrial Health. These pertain to the value of the indiscriminate use of multi-vitamin preparations in industry, the protective effect of specific vitamins against industrial hazards, and provision of adequate diets for all types of workers. A report covering the information available on these questions has been prepared.

There is continuous cooperative effort with the Council on Pharmacy and Chemistry.

COUNCIL MEMBERSHIP

The Council membership has remained unchanged over the past year. Dr. Franklin C. Bing, who served very efficiently as Secretary for a number of years, resigned early in the year to assume a new post elsewhere. After an interval of several months he was succeeded by Dr. George K. Anderson, recently of the National Research Council.

Summary

The Council on Foods and Nutrition will no longer consider all types of food products for acceptance but only those which have special value in relation to the growth and development of population groups or that

are of particular public health significance. Instead, the Council desires to devote more of its energies to nutritional education, working more closely with those groups of the food industry and government concerned with nutritional research and education. Reports will continue to be published on topics of nutritional interest.

A report has been published calling attention to the dangers of loss of fat soluble vitamins through the indiscriminate use of liquid petrolatum in foods or as a laxative. Another report showed the protective contribution made by enriched white flour to the average diet as contrasted to the deficiencies developing with the use of ordinary white flour in the same diet. The vitamin content of almost sixty prepared cereal products now on the market was determined, and a preliminary report was made showing these comparative values.

The series of articles on nutritional subjects which were recently published in *The Journal* was brought up to date by revision and published as the *Handbook of Nutrition*.

The pamphlet *Food Charts* will be revised to include latest analytic data. Effort will be made to set the optimal vitamin C level for canned citrus and tomato juices, which can be met by better growing and processing techniques and so increase the nutritional value of these foods. Efforts are being made to standardize the vitamin statements on cereal foods to make them mean more to the average consumer. The Council disapproves of the growing practice of adding vitamins to all sorts of food products (with certain exceptions), believing that only the replacement of vitamins lost in the processing of foods is desirable. The principle of obtaining vitamins from the food eaten and not from capsules was reaffirmed.

This Council has cooperated with the Council on Industrial Health to assemble and present the information available on the pressing subject of nutrition in industry in the form of a symposium. Questions on certain specific nutritional problems of industry have received the careful attention of the Council.

Dr. Franklin C. Bing resigned as Secretary of the Council after serving in this capacity for a number of years. He was succeeded by Dr. George K. Anderson.

Council on Industrial Health

The Council on Industrial Health is able to report, as in other years, a constantly widening sphere of interest and experience within the medical professional itself, in the government, in labor and in management. This fact should be borne in mind in all discussions of postwar medical planning.

PROFESSIONAL RELATIONS

During the year the field program of the Council has carried its representatives to all of the most important industrial states. Although many of the collaborating state and county medical society committees are inactive for a variety of causes, in some areas the response to the Council's recommendations has been most encouraging. Efforts to develop demonstration centers in which industrial health service, particularly for small plants, could be developed on a cooperative basis between local medical organizations and local manufacturers have been favorably received in a few localities. Discussions about the support of such projects have occurred with the Kellogg Foundation. The growth of industrial health depends on good local and state medical leadership. Further improvement in this direction is of paramount importance and must always constitute a major share of the Council's activities.

The interest of specialty groups in the medical requirements of industry and of the employed population needs encouragement. The obvious approach has been through committees already appointed by most of the sections of the Scientific Assembly and through them to other allied professional organizations. Excellent contributions have been made in the fields of industrial dermatology, ophthalmology and obstetrics and gynecology. The Council expects to develop a series of con-

ferences on pertinent topics in conjunction with these special committees. Two under consideration relate to the control of industrial noise and of illumination in the working environment, to be sponsored by the committees on industrial health in the appropriate sections. A series of reports is currently in preparation under the general title of "Surgical Principles in Industry," and the Industrial Health Committee in the Section on Practice of Medicine is sponsoring a report on "Heat Sickness." Another proposed conference will discuss the subject of case finding in industry with particular reference to chest surveys. It is planned to invite representation from the Section on Radiology, from the Committee on Industrial Tuberculosis recently created by the National Tuberculosis Association and from the U. S. Public Health Service. These developments suggest the many ways in which the Council can bring special information and facilities to bear on industrial health problems.

The American Dental Association has recently organized a Committee on Industrial Dentistry attached to its Council on Dental Health. The Secretary of the Council has been invited to act as a consultant to this committee, and it is expected that there will be many opportunities for mutually helpful activity.

The Council continues to recognize the growing importance of the industrial nurse. During the year a report entitled "Standing Orders for Nurses in Industry" was prepared and widely distributed as a means of improving the professional status of the industrial nurse and defining her relations with supervising medical authority, management and the worker. About ten thousand reprints of this publication have been distributed, mainly on specific request from interested agencies and individuals. Hundreds of individual requests have come from the industrial nurses themselves. Some form of official liaison between the Council and the official nursing organizations interested in industrial health is now being considered.

PROFESSIONAL EDUCATION

Attendance and diversity of interest at the annual congresses on Industrial Health have steadily improved. The proceedings of these congresses as published each year in the Industrial Health Number of *THE JOURNAL* and as separately reprinted are in steady demand. These meetings represent one of the most effective educational accomplishments of the Council.

A resurvey of the existing status of medical education in the industrial health field has just been completed. Since the Council has interested itself in the matter, the average number of hours of required lectures in the undergraduate curriculum has nearly doubled. Better provision of clinics, demonstration material and bedside instruction, as well as improved integration of industrial etiology in all clinical teaching, are the most essential needs. Short courses of the introductory or refresher type continue to be held under the auspices of medical schools, state medical societies and in combination. The Council has been greatly interested in the current plans for the development of a certifying board in the field of industrial health.

To intensify interest in the educational problems of industrial health both as such and in relation to the whole field of preventive medicine, the latest congresses on Industrial Health and on Medical Education and Licensure were conducted together. This experiment merits further exploration and repetition. Active participation by the Council on Medical Education and Hospitals will be requested in these and all other details of professional preparation for industrial health service.

Inquiries received from many sources about industrial health activity and procedure are steadily increasing. This clearing house function is becoming a real factor in the Council's informational and educational program. Cooperation from many authorities makes this service possible.

OTHER INTERESTED AGENCIES

The Council continues to foster close working relations with management, labor, insurance and governmental agencies. These contacts are useful, not solely as a means for broadcasting the health and economic advantages of industrial health services, but as unusually promising experiments in the field of public relations. The education of management will, whenever possible, be undertaken in conjunction with the special agencies already set up in the National Association of Manufacturers and the Chamber of Commerce of the United States. Channels

of information considered particularly effective will be the training courses in schools of business administration and in technical schools, direct collaboration with manufacturing groups, chambers of commerce, service clubs and trade associations, and publications reaching these agencies.

Similar procedure is applicable to the individual worker and to labor organizations as a means of support from that quarter in the development of adequate industrial medical service. Steps in that direction will be more labor participation in the Congress on Industrial Health, investigation of health education practices in union organizations, use of labor publications as a means for disseminating dependable medical and health information, and collection of data on medical and hospital services sponsored by labor organizations.

The casualty insurance companies, acting through their joint claims committee, have continued to interest themselves in maintaining some regular means for direct consultation with the Council. Two recent meetings have demonstrated many points of mutual interest in the fields of rehabilitation, industrial physical examinations, standardization of report forms, choice of physician and publication of data illustrating the status of medical relations under workmen's compensation.

Many agencies in the government have an unusual interest in industrial health. The Council has maintained lines of communication with appropriate agencies and individuals in the Army, Navy, Veterans Bureau, Selective Service, the U. S. Public Health Service, the U. S. Maritime Commission, the War Manpower Commission, the Federal Security Agency and the U. S. Civil Service Commission. Representatives from a number of these agencies have participated in the meetings of the Council. The Secretary of the Council on Industrial Health has recently been invited to sit on the Rehabilitation Advisory Council of the Office of Vocational Rehabilitation, Federal Security Agency. Steps are also being taken to keep informed about developments in the newest field of occupational medicine—aviation.

INDUSTRIAL HEALTH EDUCATION

A report has been formulated representing the best opinion of the Council and of the Bureau of Health Education regarding means for bringing to the industrial worker a realization of the benefits of good health and the necessity for assumption of some personal responsibility therefor. This whole field needs much exploration. The Council believes that the use of *HYGEIA* represents an unusual opportunity for the furtherance of this kind of program and will request the editor of that publication to arrange for the inclusion of material regularly which can be reproduced as health posters for wide distribution in industry.

INDUSTRIAL PHYSICAL EXAMINATIONS

A report on industrial physical examinations has been completed and widely distributed. This early phase of the Council's activity in this field will shortly be supplemented by additional material to include an outline for physical examination of women, examination of the cardiovascular system, examination of the eyes and the establishment of physical, mental and neurologic levels as aids to personnel departments and supervisors in the placement of workers in suitable occupations.

The Council has authorized its Committee on Physical Examinations to establish at the earliest convenient time contact with labor and other interested organizations with a view to discussing the whole problem of preplacement physical examinations in industry. This procedure is considered particularly important at the present time because of the necessity for reemployment in industry of disabled veterans.

Industrial physical examinations inevitably uncover many conditions needing medical attention. The Council is formulating recommendations calculated to promote cooperation between industrial physicians, private physicians and community health facilities so that these problems may be given adequate medical attention at the earliest opportunity.

WORKMEN'S COMPENSATION

The Council's interest in the special problems associated with workmen's compensation is expanding considerably. As in the past, particular attention will be paid to the preparation of

reports about trauma and disease, disability evaluation and individual occupational injuries and diseases. Discussions of medical relations under workmen's compensation are now a regular and successful feature of the annual congresses on Industrial Health. Recently contact has been established with workmen's compensation administrators through the officers and directors of the International Association of Industrial Accident Boards and Commissions. It is now proposed that the Council, through its Committee on Workmen's Compensation, apply for associate membership in that organization. A manual on workmen's compensation administration for physicians is in the planning stage and will emphasize prevention and rehabilitation as well as administrative details. Cooperation from the Bureau of Legal Medicine and Legislation and the Bureau of Medical Economics is especially needed and regularly invited. In furtherance of these plans an informal conference is being planned by the Committee on Workmen's Compensation to which interested and influential authorities will be invited.

RESEARCH AND REPORTS

The treatment of silicosis with aluminum, the derivation and extent of pulmonary sarcoid in the industrial population and the pseudonodulation found in welders are matters of current investigation by the Council's Committee on Research and Reports. Cooperation by roentgenologists and pathologists in the accumulation of dependable data along these lines is being organized.

The Council on Industrial Health and the Council on Pharmacy and Chemistry, acting jointly, have completed a preliminary report on "The Local Treatment of Burns," which is in process of revision for final approval and publication.

NUTRITION IN INDUSTRY

The Council continues to act in conjunction with the Council on Foods and Nutrition as a means of making available to physicians and industry pertinent information about essential components in the diets of American workmen, administration of vitamin concentrates by industry, the protective value of specific vitamins in specific occupational exposures, means of increasing the caloric diet of workers in heavy industry under rationing regulations and the evaluation of standards of implant food preparation and service.

REHABILITATION

A Committee on Rehabilitation has been created containing representation from the Council on Industrial Health and the Council on Physical Therapy. It has recently presented resolutions to the Board of Trustees calling attention to the fact that many factors in rehabilitation are essentially medical in nature, that programs in the Army, Navy, Veterans Administration, Federal Security Agency and Selective Service must be expected to have profound influence on certain forms of medical service and that the profession should be as widely acquainted as possible with developments in this field. This joint committee will conduct an educational service, acting through state, local and special medical societies, about methods and procedure essential to the reestablishment of disabled individuals in employment. To facilitate this form of activity the Council has recently created committees on Medical Participation in Rehabilitation and on Postwar Industrial Health Planning. An exhibit on rehabilitation is being sponsored by the Council on Physical Therapy and the Council on Industrial Health as a first step in this educational activity.

INDUSTRIAL MEDICAL SERVICE PLANS

The widespread interest of management and labor in general medical coverage for industrial workers and their dependents strongly suggests the accumulation of as much information as possible about methods already in operation. Results of this investigation will be jointly evaluated by the Council and the Bureau of Medical Economics.

Summary

Interest and experience in industrial health is developing at a rapid pace, and the Council through its educational and field services is attempting to keep the profession well informed. State and local medical societies must recognize this trend and must create effective

machinery to cope with these problems. Medical educators are more attentive to the need for special training in this field, but much additional effort is needed in this direction. Progress will be accelerated with assistance from the Council on Medical Education and Hospitals.

The Council is mobilizing undeveloped resources for special investigation and information through committees and consultants, mainly derived from the sections of the Scientific Assembly. Closer relations with labor, with management and with official agencies provide means for the dissemination of helpful information about industrial health. The same procedure has excellent potentialities in the field of public relations.

The Council, in company with the Bureau of Health Education, has considered practical measures for teaching personal hygiene to workers. The use of Hygeia for this purpose has been recommended. The fundamental basis for all preventive medical service in industry is the physical examination. The Council has prepared an outline for this procedure, soon to be augmented by additional recommendations regarding women, the eyes, the cardiovascular system, hernia and so forth.

A program of research into a number of occupational exposures is currently under way. The neglected field of medical relations under workmen's compensation is undergoing close scrutiny. Special attention is being paid to the establishment of regular means of consultation between the Council, workmen's compensation administrators and casualty insurance companies.

Special projects with other agencies in the American Medical Association are a report on burns with the Council on Pharmacy and Chemistry, an investigation of industrial medical service plans with the Bureau of Medical Economics, and reviews of the status of industrial nutrition with the Council on Foods and Nutrition. Particular attention is being directed at the rapidly growing field of rehabilitation and reemployment of the disabled in industry. A joint Rehabilitation Committee has been set up in company with the Council on Physical Therapy to promote an educational campaign throughout the profession to acquaint physicians with developments in this field and the need for maintaining high standards of professional conduct and procedure.

Bureau of Health Education

Difficulties growing out of the prosecution of the war resulted in curtailment of some of the activities of the Bureau of Health Education. Depletion of office personnel, restrictions on travel and other conditions interfered with certain phases of the Bureau's operations. However, new developments and demands engaged the active attention of the Bureau and resulted in some changes in the working program and in the scope of its operations, so that the year was a very busy one.

CORRESPONDENCE

A sharp reduction occurred in all classes of Bureau mail. Signed correspondence with doctors and cooperating agencies dropped from 3,993 in 1942 to 2,724, question and answer correspondence from 8,283 to 5,800, letters requesting free material for use in health education from 890 to 517. No effort at all was made to get radio audience mail, both because of personnel shortages and because of paper restrictions, but the number of inquiries received in 1943 was larger than in 1942. The total volume of mail declined by a little more than 50 per cent. Almost the only class of mail that held up to previous years was that originating at the Cleveland Health Museum, the Chicago Museum of Science and Industry and miscellaneous fairs and exhibitions where "question boxes" were installed some time ago. A new "box" was placed in the Newark, N. J., Health Museum in 1943.

PUBLICATIONS

The Director of the Bureau prepared forty-seven book reviews and sixty other items for Association publications. Twenty-three articles were provided for publication in other periodicals.

RADIO

The first radio broadcast series under the title "Doctors at War," begun in December 1942, was completed in June 1943. This was the eighth consecutive year of coast to coast network dramatized broadcasts. The National Broadcasting Company furnished the radio time gratis, as usual, on approximately seventy-five stations coast to coast and contributed liberally to production costs. Distinguished guest speakers included highest ranking medical officers of the Army, the Navy, the United States Public Health Service and the Army Air Force and physicians from civilian life. The program closed with an international broadcast at which, through the generosity of the National Broadcasting Company, it was possible to present by direct short wave transmission the chief medical officers of the Army in North Africa and in England, the highest ranking Navy medical officers at Pearl Harbor and the commanding officer of the Navy hospital at Great Lakes, Illinois. The second series of "Doctors at War" was postponed until Jan. 8, 1944.

The use of the radio script service maintained by the Bureau for local broadcasting, which showed a slight increase in 1942, dropped off greatly in 1943; 1,746 scripts were distributed, as compared with 2,660 in the preceding year. One state association and thirty-seven county societies used the service. Six county medical societies used this radio material for the first time in 1943. Owing to decreased use of the five minute talks, these were discontinued.

Depletion of the ranks of medical societies and loss of full time secretaries has interfered with local medical broadcasting at a time when such broadcasts by the medical profession are of exceptional importance. The Bureau therefore recommended the preparation of electrical transcriptions in 1942 and was authorized by the Trustees to undertake an experiment along this line in 1943. The making of radio transcriptions was begun in conjunction with local broadcasts over WLS, the Prairie Farmer station, Chicago. Three series of broadcasts were made on this station under the titles "Before the Doctor Comes," "Summer Health Hints" and "Dodging Contagious Diseases." The series "Before the Doctor Comes" and the series "Dodging Contagious Diseases" were recorded.

"Before the Doctor Comes" is a series of sixteen ten-minute interviews, which are shipped out with instructions about adding material locally to make fifteen-minute broadcasts with music. The series "Dodging Contagious Diseases" consists of twelve interviews, also of ten minutes each, sent out with similar instructions. In addition, eight recordings were made of a series first entitled "American Medicine Serves the World at War" and then retitled "Medicine Serves America."

Distribution of the transcriptions was begun July 1. The sets were used thirty-five times in 1943, and the users included state, city and county health departments, state and county medical societies, public schools, state universities, woman's auxiliaries, Y. M. C. A.'s and a Civilian Defense Council.

The contagious disease series was recorded for 1944 use and has therefore had no circulation as yet.

At the Chicago meeting of the House of Delegates of the American Medical Association two local broadcasts were arranged, plus one network broadcast each on the National Broadcasting Company, the Columbia Broadcasting System, the Blue and the Mutual Broadcasting Company networks. Talks prepared for broadcasting for which no radio time was secured were recorded and made part of the series "Medicine Serves America."

The Director of the Bureau delivered two radio talks over local stations outside of Chicago while on speaking trips.

MEETINGS AND CONFERENCES

The Director and Assistant Director traveled 25,282 miles to address audiences or attend meetings in twelve states.

Opportunities for speakers have declined as a result of the war. Difficulties of travel have not in themselves prevented acceptance of invitations, but recognition of such difficulties has undoubtedly dried up many invitations at their source. The total number of appearances was 127, the attendance 26,730.

In addition, the Director participated in thirty-eight conferences and meetings.

HYGEIA CLIPPING COLLECTIONS

The use of HYGEIA loan collections of clipping material by local physicians decreased from 265 to 103 loans in thirty states. The principal topic called for among available loan collections was "outstanding medical advances."

HEALTH PUBLICATIONS

All the Bureau's health publications during the year were kept under careful scrutiny by reason of the paper quota. The distribution from stock in 1943 was 176,859, plus 67,600 HYGEIA reprints in specially printed lots. This total of 244,459 represents a decline of practically 33 per cent from the high point of distribution in 1942. It is only a small reduction from the 272,211 distributed in 1940. Many of these pamphlets are purchased for use in schools and are read by many persons.

Three thousand copies of "Gonorrhea—The Tragicomedian," by Greer Williams, and 3,000 catalogues of health publications were given to the American Social Hygiene Association to be included in packets which it distributes as program aids for local agencies sponsoring Social Hygiene Day meetings each February.

Eighteen new titles were added to the Bureau publications during the year, ten were discontinued and one was revised.

The health posters developed from 1938 to 1940 continue to be in demand. In 1943 1,050 sets were sent out, making a total of 6,128 sets distributed since 1938.

COOPERATIVE RELATIONSHIPS

Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.—Owing to wartime situations no meeting of this committee was held in 1943, but the committee had a meeting in March 1944 at the American Medical Association headquarters building.

The term of Dr. A. J. Chesley as a member of the committee expired July 1, 1943. The Board of Trustees appointed him to succeed himself for a five year term.

Representing the American Medical Association on the committee as now constituted are Dr. Thurman B. Rice, Indianapolis; Dr. George M. Lyon, Huntington, W. Va., now in active service with the U. S. Navy; Dr. Glenville Giddings Jr., Atlanta, Ga.; Dr. W. W. Bauer, Chicago, and Dr. A. J. Chesley, Minneapolis.

U. S. Children's Bureau Advisory Committee.—The Advisory Committee to the U. S. Children's Bureau did not meet at all in 1942. Its first meeting in 1943 was on April 6, making a lapse of sixteen months since the meeting of Dec. 1-2, 1941. At the meeting on April 6 the committee was presented with the following mimeographed materials:

(a) A two page mimeographed circular dated March 29, 1943 giving a general outline of the regulations governing allotments to states for Emergency Maternal and Infant Care for the Wives and Infants of Enlisted Men in the first four pay grades.

(b) An eighteen page mimeographed circular containing detailed regulations for obstetric and infant care under the emergency program, together with information as to the amounts available for the several states under the plan and proposed forms for applications, requests for authorization and authorizations under the plan.

(c) A publicity release dated March 26, 1943 describing and urging the use of the plan.

(d) An eight page mimeographed circular describing the purchase of hospital care under Crippled Children's or Maternal and Child Health Program.

At this meeting the committee was informed that discussion of the plan as outlined in the mimeographed material was desired and individual suggestions from members of the committee were requested, but its members were not to submit any resolutions or any votes representing the committee's group opinion. In the discussion a great many objections were offered to items in the regulations. Some minor modifications were made after the meeting.

The next meeting of the Advisory Committee was held at Washington, October 21, for further consideration of the regulations. The Bureau of Health Education telegraphed twenty-four state medical societies in various parts of the United States for a statement of their attitude toward the program. Replies received are summarized as follows:

There is no division of opinion with respect to the desirability of providing generously for all the needs of the families of service men whose pay grades render government assistance necessary. In recognition of this principle, the House of Delegates of the American Medical Association, at its Chicago meeting in June 1943, approved the action of the federal government in making funds available for maternity and infant care for the wives and infants of enlisted men.

There is room for honest difference of opinion as to administrative methods. The resolution passed by the American Medical Association House of Delegates does not approve of a plan whereby service in kind is rendered to the wives and infants of service men, believing such service to be needless and undesirable because it is not in accord with the American system of medical practice. Most members of the medical profession believe that cash allotments should be made for obstetric care and infant care for the wives and children of service men in the same manner as cash allotments are made to the wives and children of service men for other necessities of life; some doctors hold the opposite view.

At this meeting many of the medical representatives on the committee, including the Director of the Bureau of Health Education, raised objections to many phases of the Children's Bureau plans, especially to the provision for paying doctors and hospitals direct, thus in effect making them state employees. Among those who registered opposition at this meeting were a number who had consistently supported the Children's Bureau in previous meetings of the committee. The Advisory Committee to the Children's Bureau, since its establishment in 1935, has included a number of distinguished obstetricians and pediatricians who have consistently supported the Children's Bureau. Some of these now give evidence of a change of opinion. Many of the members of the committee are nonmedical persons from the field of social service work. The physicians on the committee have been largely men in public health or full time professorial positions rather than practicing physicians. Membership on the committee is on an individual basis. Although the Director of the Bureau of Health Education was chosen with the approval of the American Medical Association, it has been made clear that he is not there as a representative of the American Medical Association.

The Children's Bureau is free to take or leave the advice of the Advisory Committee. It has taken advice on many minor and some major points of procedure, but it has not yet reversed or deviated from any of its fundamental policies, even when disapproval was manifest in the committee. There has not been any formal action by the committee opposing any of the fundamental policies of the Children's Bureau. The medical members of the committee are not unanimous, and those who oppose the fundamental features of the Children's Bureau policies do not constitute a majority.

Following the October meeting the principal changes which were made in response to recommendations from the Advisory Committee were as follows:

(a) The Children's Bureau agreed to appoint not less than five new members, all to be physicians in the private practice of medicine.

(b) The Children's Bureau agreed to revise its regulations to provide more fair, flexible and adequate compensation for physicians, especially with relation to the treatment of intercurrent disease complicating but not due to the pregnant state.

Following the meeting of the Children's Bureau Advisory Committee the annual meeting of state medical society secretaries and editors was held at the headquarters of the American Medical Association on November 19 and 20. Dr. Edwin F. Dailey of the U. S. Children's Bureau was present. There was frank discussion of the plan and criticism of the Children's Bureau, especially with respect to inadequate publicity through medical channels, about the work and purposes of the Bureau (THE JOURNAL, Jan. 22, 1944, p. 172). Just prior to this meeting the executive board of the American Academy of Pediatrics had adopted a resolution calling on the Children's Bureau to arrange a conference between the Children's Bureau and official representatives of medical organizations, hospitals and the interests of soldiers.

On December 10 and 11 a meeting was held in Washington in response to the request of the American Academy of

Pediatrics. The following organizations were represented by the persons named:

American Medical Association: Dr. A. W. Adson, Rochester, Minn.; Dr. R. L. Sensenich, South Bend, Ind.
American Hospital Association: George Bugbee, James Russell Clark, U. S. Public Health Service; Dr. L. R. Thompson, Washington, D. C.; Dr. Joseph Mountin, Washington, D. C.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons: Dr. M. P. Rucker, Richmond, Va.; Dr. J. B. Jacobs, Washington, D. C.
American Academy of Pediatrics: Dr. Stanley Nichols, Asbury Park, N. J.; Dr. Joseph S. Wall, Washington, D. C.
Association of State and Territorial Health Officers: Dr. Edward S. Godfrey, Albany, N. Y.; Dr. Felix J. Underwood, Jackson, Miss.
American Pediatric Society: Dr. Wilburt Davison, Durham, N. C.
American Gynecological Society: Dr. George Kosmak, New York.
Committee of Physicians for the Improvement of Medical Care: Dr. Robert L. DeNormandie, Boston.
War Department Dependency Board: Major Gen. Roger W. Eckfeldt.
Bureau of Naval Personnel: Capt. J. L. Reynolds.
Office of Surgeon General, War Department: Major Margaret Craighill.
Army Emergency Relief: Mr. R. C. Branion.
Navy Relief Society: Admiral J. O. Richardson; Miss Lucia Murchison.
American Red Cross: Dr. G. Foard McGinnes, Nashville, Tenn.
American Legion: Mr. Milt Campbell.

The following members of the Advisory Committee to the United States Children's Bureau also were present:

Dr. Sterling H. Ashmun *	Dr. Joseph I. Linde
Dr. W. W. Bauer	Dr. John Z. Preston *
Dr. Edward M. Davis	Nathan Sinai, Ph.D.
Dr. Wilburt C. Davison	Dr. George S. Stevenson
Dr. Robert L. DeNormandie	Dr. Felix J. Underwood
Dr. Nicholson J. Eastman	Dr. Joseph S. Wall
Dr. Clifford G. Grulee	Dr. Philip F. Williams
Dr. Elinor B. Harvey *	Dr. Harvey F. Garrison *
Dr. George Kosmak	

* The names starred are the names of new members of the Advisory Committee, appointed in response to the demand initiated by a number of members of the Advisory Committee, at its last meeting, Oct. 21, 1943.

In addition there were present the following representatives of various organizations which maintain Washington representation:

National Women's Trade Union League: Elisabeth Christman.
National Board Y. W. C. A.: Mrs. James B. Irwin.
National Congress of Parents and Teachers: Mrs. C. D. Lowe.
General Federation of Women's Clubs: Mrs. Harvey Wiley.
Women's Christian Temperance Union: Elizabeth Smart.

The meeting was opened with a statement by Dr. Eliot and Miss Lenroot and by the introduction of all the official representatives present. The American Academy of Pediatrics, in the person of its representative, Dr. Joseph S. Wall, was called on to present and explain its resolution, and the representatives of all the organizations listed were then called on to express their views, after which the meeting was thrown open to general discussion.

Out of the two day session came the following results:

1. On the issue of cash allotments vs. a series program, the position of the Children's Bureau was sustained by the overwhelming opposition of all groups represented, except the American Medical Association, to the use of cash allotments in this program. Reasons for opposing cash benefits were advanced particularly by Captain Reynolds on behalf of the Navy, Miss Murchison on behalf of Navy Relief, and Major General Eckfeldt for the War Department Dependency Board. These reasons are as follows:

(a) The majority of young women applying for dependency benefits or for the EMIC service are in their teens and by reason of age, inexperience and confusion are incapable of intelligently handling considerable sums of cash.

(b) Most of the mothers and infants are living away from home and would be unlikely to get as good medical care through their own efforts as through the Children's Bureau program as set up.

(c) Many of the cash allotments, if made, would be spent for purposes other than medical care and hospitalization.

(d) It appears to be the plain intent of Congress that these funds are to be used for service and not be distributed as cash allotments.

(e) Cash allotments would favor the employment of unqualified practitioners as a result of the youth and inexperience of the prospective mothers, or mothers of young infants.

NOTE.—At this point representatives of the American Medical Association made it clear that, having been outvoted in their stand for the principles adopted by the House of Delegates, they participated in the remaining discussions in the spirit of cooperation expressed by the House of Delegates in its endorsement of the objectives and purposes of the program, reserving the right to continue to differ with the method of administration.

2. The question of whether a prospective mother should be allowed to pay her doctor an additional fee, especially in the case of employment of specialists whose normal fees are above

the scale established in the EMIC plan, was decided in the negative, namely that a physician accepting a case under the plan would not be allowed to accept supplemental fees from or on behalf of the patient. This raised the question of:

3. Additional payment for services rendered other than obstetric complications and such minor illnesses as would more or less be routinely cared for by the obstetrician in normal obstetric practice.

Fees for consultation are already encompassed in the plan, but many doctors, especially in rural regions, would perform services themselves to their obstetric patients requiring surgery, medical treatment of intercurrent diseases not related to pregnancy or accidental injuries. For these services it was recommended by the conference that the Children's Bureau establish a schedule of supplementary fees to be paid to the attending physician under the circumstances herein outlined.

4. It was also recommended that the entire schedule of fees, representing the maximum fees to be allowed for certain services, be reviewed by the Children's Bureau in the light of the preceding actions.

5. With respect to the question of whether a patient should be allowed to pay and a hospital to accept supplemental payment from the patient or on her behalf for accommodations of more expensive type than provided under the plan, it was decided in the negative, namely that no such supplemental payments should be made or accepted.

NOTE.—The action represented in paragraphs 2 and 5, dealing respectively with supplemental payments by the patient to the doctor or to the hospital, was based on the consensus of the group that it would be a protection to the doctors and hospitals against any misunderstandings which might be interpreted to indicate unfair bargaining on the part of the hospital or the doctor and would tend needlessly to complicate the program and create avoidable misunderstandings.

6. A very clear statement was made by a number of physicians representing the American Academy of Pediatrics and the American Medical Association, and by some medical members of the Advisory Committee, to the effect that physicians, while concurring in the purpose of the program to render service to and free from anxiety the families of servicemen, wished it understood that they are aware of the potentialities of this program as a possible trial balloon, bridgehead or entering wedge looking toward the extension of medical service in point of time beyond the duration of the war and in breadth of scope, both as to kinds of service and as to groups served. They served notice on the Children's Bureau that they would wholeheartedly cooperate with the program for servicemen's families for the duration but not beyond. In response, officials of the Children's Bureau stated that the program was carried on under the authority of the Social Security Act, but under temporary appropriations visualized as national defense appropriations and therefore terminating six months after the peace. As to what they might advocate after the peace, officials of the Children's Bureau refused to be committed. Miss Lenroot stated specifically that after the peace there would be opportunity for any group to advocate any kind of program, conservative or liberal, which it might choose. Dr. Eliot stated that the EMIC program as it stands was an outgrowth of the emergency, was undertaken in response to a request from an Army general at Fort Lewis, Washington, and that it was not a part of any "master plan" of which she knew.

Following this meeting the Children's Bureau issued a revised set of regulations which were published in *THE JOURNAL*, Jan. 22, 1944.

Contained in title V of the Social Security Act is authorization for experiments and demonstrations in medical care. It was this authorization which permitted the Children's Bureau to start the Washington state health department on an experimental program in emergency medical and infant care for servicemen's wives and children in the vicinity of Fort Lewis. This is cited by the Children's Bureau as its legislative authority for starting new programs. Existing funds can be and are being used, but when the program grows very large as in the EMIC situation, additional appropriations are necessary.

A program for the care of rheumatic children now being developed is based on this same authority in title V of the Social Security Act. This was extensively discussed at a meeting on October 6 and 7 by a group including representatives of many public health agencies and also including the Advisory Committee to the Children's Bureau. In approximately twelve states demonstrations in the care of rheumatic fever patients are being carried out through maternal and child health divisions of the state health departments. Presumably this program may be extended by adopting it in other states. At present it is limited to the care of those who are not able to procure treatment privately. It would appear that the Children's Bureau considers medical treatment to be an integral part of public health service in many circumstances. Extension of the rheumatic fever program to other states and to broader population groups is a logical step in the extension of federalized medicine by those who believe that such procedures are in the public interest.

National Committee for Boys and Girls Club Work.—This work proceeds routinely, with nothing of particular interest to report in 1943.

National Congress of Parents and Teachers.—This work also proceeds routinely in accordance with trends established and reported in previous years. Wartime scarcity of doctors and dentists has caused the program to be modified in many communities.

Other Organizations.—The following organizations, on which the Director represents the American Medical Association, did not call on the Bureau for aid during the year, but the relationship is not officially discontinued:

Advisory Board, American Camping Association.
Committee on Public Health, American Film Center.
Advisory Committee, Community Nursing Service, National Organization for public Health Nursing.

The National Health Council Committee for the Study of Voluntary Health Agencies met in New York on October 13 during the meeting of the American Public Health Association. Preparation of the report is under way. The most important question raised in the committee meeting was whether professional agencies like the American Medical Association, the American Dental Association and similar groups should be regarded as voluntary health agencies. The Director took the position that if the medical profession is not a health agency there can be no such thing as a health agency. After some discussion it was decided to include the most important professional organizations, as far as possible, in the study. Accordingly, Miss Anna B. Towse, a field investigator for the committee, spent approximately five days at the headquarters of the American Medical Association interviewing the General Manager, the Editor and department heads.

There was no meeting of the National Conference for Cooperation in School Health Education in 1943, but the Executive Committee met during the meeting of the American Public Health Association in New York in October. The principal discussion at this meeting had to do with procuring financial aid for the functioning of the conference. As yet nothing definite has been done.

The Director continues to be active in the affairs of the American Public Health Association. He was elected to the Governing Council of the American Public Health Association for a three year term expiring in 1947. He is a member of the subcommittee on Accident Prevention of the American Public Health Association Committee on Administrative Practice. He is chairman of the Health Education Section's Committee on Health Education in Hospitals, Outpatient Departments and Clinics.

The United States Office of Education called a special meeting of a subcommittee on methods of preparing teachers in science studies, home economics and other related fields to serve as health instructors during the emergency. This committee prepared and submitted a technical report which was accepted by the United States Office of Education and the committee was then disbanded.

The United States Office of Education and the W. K. Kellogg Foundation invited the Director to participate in a committee

to study ways and means of extending to other states the Michigan plan of coordinating health education in high schools. Thus far the procedure has progressed only to the point of studying possible methods and costs of extending the Michigan plan of coordinated health education in secondary schools to other states through the United States Office of Education with Kellogg funds.

Agencies of the United States government with which the Bureau has cooperated or to which the Bureau has furnished information during the year are as follows:

Federal Security Agency; Office of Education; Public Health Service; Office of Defense Health and Welfare Service; National Negro Health Movement.

War Department (U. S. Army): Office of Surgeon General, U. S. Army; Bureau of Public Relations; Liaison Office, War Department and A. M. A.; Office of Technical Information; Sixth Service Command, Chicago; Army Service Forces, Washington; Office of Chief of Ordnance, Chicago; Civil Affairs Division.

Office of War Information; Navy Department U. S. Naval Air Station, Pensacola, Fla.; Ninth Naval District, Great Lakes, Ill.; Naval Medical Research Institute.

Department of Agriculture: Extension Service, Washington; Farm Security Administration, Washington; Farm Security Administration, Dallas, Texas.

Department of the Interior: Office of Indian Affairs, Denver.

Post Office Department

War Food Administration; Division of Marketing Reports

Coast Guard, Alameda, Calif.

Department of Commerce: Bureau of the Census

Office of Coordinator of Inter-American Affairs

OTHER AGENCIES

United States Chamber of Commerce.

Pan American Sanitary Bureau

MISCELLANEOUS

The Bureau continued to compile information on protection of medical research but was not called on for any work along this line except the routine distribution of information to combat the activities of the antivivisectionists.

The Director evaluated and criticized three manuscripts submitted by graduate students and candidates for advanced degrees.

The Director served on the Chicago Nutrition Committee and also on the Committee on Health Education of the Council of Social Agencies of Chicago.

In accordance with a resolution adopted by the House of Delegates in 1943 the Bureau has endeavored to assist associations of biology teachers who wish to use the Association's resolutions recommending the teaching of biology in high schools. As yet there have been few requests for implementation of this resolution. This matter was discussed at the meeting of the Joint Committee of the American Medical Association and the National Education Association.

In accordance with authorization from the Board of Trustees the Bureau continued to offer its facilities and those of related Association bureaus for the use of visiting graduate students. This service, inaugurated in 1942, was used by only one student during that year. In 1943 one individual student participated in a two weeks course and a group of twenty-nine postgraduate students in health education from the University of North Carolina spent a week at the Association headquarters, arrangements having been made by the United States Public Health Service. These students were being trained under a W. K. Kellogg Foundation grant.

The following letter was received from the United States Public Health Service after the termination of the week's work:

The Public Health Service is very grateful to the American Medical Association for the week of intensive instruction and experience provided its fellows in health education who are taking their academic work in the University of North Carolina. We are particularly grateful to Dr. Bauer for the generous amount of time and effort he gave to the planning and carrying out of the program, because it could only mean an added responsibility to an already crowded work program.

All of the fellows were amazed at the amount of time and attention that was so freely given them. They especially mentioned their interest in learning of the variety and intensity of work carried on by the American Medical Association for the protection and welfare of the general public.

We should appreciate it if you would also convey our gratitude to Miss Waller, Mr. Poole, Dr. Carey and all the others who contributed to the success of the program for the fellowship students.

Very truly yours,
WARREN F. DRAHER,
Acting Surgeon General

Seven representatives of various South and Central American countries were entertained and the work of the Association demonstrated to them over a period of four days at the request of the Pan American Sanitary Bureau. Arrangements also were made for these visitors to see other medical facilities in Chicago.

The surgeon general and the assistant surgeon general of the army of the republic of Chile were entertained for three days at the request of the Office of the Coordinator of Inter-American affairs.

Summary

Wartime conditions, especially personnel difficulties, greatly curtailed the work of the Bureau in 1943.

Correspondence dropped from 25,310 letters in 1942 to 11,259, but 80 per cent of this reduction is explained by the total absence of radio "fan mail," which was not solicited during the year.

The Bureau prepared forty-seven book reviews for *The Journal* and *Hygeia* and made sixty other contributions to these publications, besides originating twenty-three articles published in other periodicals.

A nationwide dramatized radio broadcasting program in cooperation with the National Broadcasting Company was carried out under the title "Doctors at War," with high ranking medical officers of the Army, Navy, Public Health Service and Air Force and distinguished physicians from civilian life as guest speakers.

Electrically transcribed radio programs for local use were prepared as follows: "Before the Doctor Comes," sixteen broadcasts; "Dodging Contagious Diseases," twelve broadcasts; "Medicine Serves America," eight broadcasts. These were used thirty-five times locally in the last six months of 1943 by state, city and county health departments, state and county medical societies, public schools, state universities, woman's auxiliaries, Y. M. C. A's. and a Civilian Defense Council.

Radio broadcasting, local and network, was arranged as usual during the Chicago meeting of the House of Delegates.

The Director delivered 127 addresses in twelve states, with a total attendance of 26,730 persons.

Hygeia clipping collections were lent to 103 local physicians in thirty states for use in preparing talks to lay audiences.

The Bureau distributed 224,459 copies of its pamphlet publications; eighteen new titles were added to the list, ten discontinued and one revised.

Health poster sets numbering 1,050 were sent out in 1943, making a total of 6,128 sets of posters distributed since 1938; these posters were developed on the basis of *Hygeia* cover plates.

The Bureau participated in cooperative work with the following organizations: Joint Committee on Health Problems in Education, with the National Education Association; Advisory Committee on Maternal and Child Health, with the U. S. Children's Bureau; National Committee for Boys and Girls Club Work; National Congress of Parents and Teachers; National Health Council Committee for the Study of Voluntary Health Agencies; National Conference for Cooperation in School Health Education; American Public Health Association; United States Office of Education; W. K. Kellogg Foundation.

The Bureau cooperated with or furnished information to twenty-eight United States government agencies in 1943.

An important activity of the Bureau was its arrangements for entertaining and instructing visitors. The principal group during the year consisted of twenty-nine trainees in health education doing postgraduate work at the University of North Carolina under the direction of the U. S. Public Health Service and the sponsorship of the W. K. Kellogg Foundation. These twenty-nine young women, together with a supervisor from the U. S. Public Health Service, spent a week at

the American Medical Association headquarters studying the work of the Association in general and its contributions to health education in particular. In addition, one individual student from the North Dakota State Department of Health spent a week with the Association for the same purpose. A group of South American physicians visiting the United States under the sponsorship of the Pan American Sanitary Bureau was shown the courtesies of the headquarters and put in touch with other medical facilities in Chicago, as were two medical officers of the army of the republic of Chile, sent to us with a guide by the Office of the Coordinator of Inter-American Affairs.

Bureau of Legal Medicine and Legislation

Since the report of last year, Mr. George E. Hall Jr., a member of the Bureau staff, has been inducted into the Army. For the last six months of 1943 the Director of the Bureau served also as the Acting Secretary of the Council on Medical Service and Public Relations, pending the selection of a permanent secretary.

POSTWAR MEDICAL LICENSURE

Many recent graduates of medicine are being inducted into the Medical Corps of the Army and Navy prior to licensure. Some of these physicians will remain in service a number of years and on discharge will face the problem of meeting state licensure requirements. The examination requirements, basic science as well as medical, may present considerable difficulty in view of the lapse of time since graduation. Legislation has already been introduced in one state, Mississippi, under which the licensing agency will be authorized to license without examination all bona fide residents of the state who (1) graduated from accredited medical schools, (2) served as physicians in the armed forces of the United States and (3) were unable to apply for licensure by reason of entry into service. The medical practice acts of a few other states now contain provisions granting special consideration to former medical officers of the Army and Navy, as in Arizona, California, Illinois, Pennsylvania, Texas and Wisconsin. It seems timely to suggest that medical licensure laws be reviewed as they may apply to graduates of medicine who will return to civilian life after honorable discharge from the Army and Navy and whose licensure was prevented by entry into service.

ISONIPECAINE: DEMEROL

During the course of a congressional hearing on budget estimates for the Treasury Department, the Commissioner of Narcotics referred to a synthetic coal tar product recently appearing in limited quantities on the market in this country under the trade name of Demerol. This product originated in Germany some years ago, has a resemblance to morphine in skeleton form and effect and is, it is claimed, habit forming. In the country of its origin its use has been brought under control under opium legislation. It has been used in South America, where it is on a prescription basis. The Canadian government, the Commissioner of Narcotics reported, has asked the League of Nations to initiate procedures to place the same restrictions on the use of the drug as apply to the use of opium and its derivatives. The Commissioner of Narcotics advocated that steps be taken now to bring its use under federal control and stated that recommendation for appropriate legislation was pending before the Bureau of the Budget.

In five states, Kentucky, Mississippi, New Jersey, South Carolina and Virginia, bills have been introduced and are now pending to place the drug on a prescription basis. This state legislation, it is understood, is being promoted by the Federal Bureau of Narcotics and relates to a preparation designated as isonipecaine and defined as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified." This product seems to be the same as that marketed under the trade name of Demerol. In one state, Virginia, the two designations are used in the alternative.

LECTURES ON MEDICAL JURISPRUDENCE

The Bureau in its report for last year commented on an important development in Philadelphia in the field of legal medicine in the form of an initial series of lectures arranged under the direction of the coroner and under the sponsorship of the Philadelphia County Medical Society, the six medical schools of the city, the bar association, the district attorney's office and the Philadelphia College of Pharmacy and Science. A second series of similar lectures was arranged for 1944, the program being given as a memorial to Dr. Herbert M. Goddard, the former coroner of the city and county of Philadelphia, who died last year.

The Los Angeles County Medical Association has recently scheduled a somewhat similar series of lectures, arranged by the counsel of that association. Possibly the demands of war may preclude for the present the arrangement by other medical societies of programs of this type, but it is a development that should be given thoughtful consideration, particularly by medical societies in metropolitan areas where speakers on the various aspects of legal medicine or medical jurisprudence are readily available. Periodic programs of this type, attended by members of the bar and by physicians, will result in a much needed diffusion of information in this important field.

FEDERAL LEGISLATION

During the first session of the Seventy-Eighth Congress, which convened Jan. 6, 1943 and adjourned Dec. 21, 1943, a total of 6,527 bills were introduced, including joint resolutions, concurrent resolutions and simple resolutions. Of these approximately 280 were of sufficient medical interest to warrant the preparation of abstracts for publication in *THE JOURNAL*. The second session of the Congress convened at noon, Jan. 10, 1944, and is in progress at the time this report is being prepared. A brief summary of the more important measures of medical interest enacted and of those still pending follows:

Female Physicians in Medical Corps of Army and Navy.—Congressional action has been completed on legislation providing for the appointment of female physicians in the Medical Corps of the Army and Navy. The law was approved by the President April 16, 1943 as Public Law No. 38, Seventy-Eighth Congress. It provides that during the present war and for six months thereafter there shall be included in the Medical Departments of the Army and Navy such licensed female physicians as the Secretary of War and the Secretary of the Navy may deem necessary, whose qualifications, duties and assignments will be in accordance with regulations to be prescribed by the Secretary. Those appointed are to be commissioned in the Army of the United States or the Naval Reserve and will receive the same pay and allowances and be entitled to the same rights, privileges and benefits as members of the Officers' Reserve Corps of the Army and the Naval Reserve of the Navy with the same grade and length of service.

Pharmacy Corps in Medical Department of Army.—On July 12, 1943 the President approved a bill to establish in the Medical Department of the Army a corps to be known as the Pharmacy Corps (Public Law No. 130). As originally introduced, this legislation proposed to eliminate the Medical Administrative Corps in the Medical Department of the Regular Army and to substitute therefor a Pharmacy Corps. As enacted, the law leaves undisturbed the Medical Administrative Corps and provides for the creation of a Pharmacy Corps to consist of seventy-two officers in grades from colonel to second lieutenant, inclusive. Appointments in the corps, with certain exceptions, will be made in the grade of second lieutenant from pharmacists between the ages of 21 and 32 years who are graduates of recognized schools or colleges of pharmacy requiring four years of instruction for graduation under such regulations and after such examinations as the Secretary of War prescribes. An officer of the Pharmacy Corps will be promoted to the grade of first lieutenant after three years' service, to the grade of captain after six years' service, to the grade of major after twelve years' service, to the grade of lieutenant colonel after twenty years' service and to the grade of colonel after twenty-six years' service. Pharmacists who were officers of the Regular Army holding commissions in the Medical Administrative Corps were

transferred to the Pharmacy Corps and commissioned "in grade in such corps."

Reorganization of Public Health Service; Codification of Laws Relating to the Service.—Legislation was transmitted to the Congress by the Federal Security Agency to effect a reorganization of the United States Public Health Service on which congressional action has been completed (Public Law No. 184). It provides that the Public Health Service shall consist of the Office of the Surgeon General, the National Institute of Health and two bureaus to be known as the Bureau of Medical Services and the Bureau of State Services. Under the direction of the Federal Security Administrator, the Surgeon General of the service is authorized to direct the assignment to such divisions of the several functions of the service and to establish such sections or units as may be requisite. The Surgeon General may, too, abolish existing divisions, sections and other units and may transfer, establish and consolidate divisions, sections and other units and reassign their functions for the efficiency of the service. Commissioned officers of the service, regular and reserve (including surviving beneficiaries) will be entitled to receive the same benefits for injury or death in the performance of their duties as civil officers and employees of the United States under the United States Employees' Compensation Act. Such commissioned officers will be entitled, in time of war, to limited military benefits with respect to all active service in the Public Health Service, to full military benefits while detailed for duty with the Army, Navy or Coast Guard or while serving outside the continental limits of the United States or in Alaska in time of war. The President is authorized, at any time during which the country is at war, by executive order to declare the commissioned corps of the Public Health Service a part of the military forces, and on the issuance of such an order commissioned officers of the service will be entitled to full military benefits with respect to active service rendered while the Public Health Service is a part of the military forces of the United States.

The new law provides further that in time of war or national emergency any commissioned officer of the regular corps of the Public Health Service may be appointed to higher temporary grade with pay and allowances thereof without vacating his permanent appointment. The surviving beneficiaries of any commissioned officer of the service who, since Dec. 7, 1941 and prior to Nov. 11, 1943, the date on which the law was signed, has lost his life while on active duty in the service or while detailed to the Army, Navy or Coast Guard, shall receive six months' pay and certain other benefits. The law declares eligible for appointment as reserve officers in the Public Health Service graduates of reputable osteopathic colleges. This authority will remain in effect for the duration of the war and for six months thereafter.

Legislation pending respectively in the Senate Committee on Education and Labor (S. 1683) and in the House Committee on Interstate and Foreign Commerce (H. R. 3379) contemplates a codification of the laws relating to the Public Health Service.

Obstetric and Pediatric Care for Wives and Infants of Servicemen.—The Seventy-Eighth Congress, to date, has appropriated the sum of \$24,200,000 for use by the Children's Bureau in making allotments to the several states to provide obstetric and pediatric care for the wives and infants of servicemen. Shortly after the Seventy-Eighth Congress convened, President Roosevelt requested an appropriation of \$1,200,000 to continue a program that had been in operation since August 1941 to provide these services. Prior to that time the program had been financed under allotments made by the Children's Bureau, totaling \$390,177, from the regular appropriation authorized by the Social Security Act for maternal and child health activities. Following the submission of the request for additional appropriations, the House Committee on Appropriations refused to recommend the inclusion of the requested amount in a deficiency appropriation bill, principally on the ground that there was in existence no legislation authorizing the program and therefore the House of Representatives was without authority to appropriate money for its extension. Efforts were made on the floor of the House to amend the deficiency appropriation bill, but they failed. When this bill reached the Senate, however, it

was amended to include the \$1,200,000 requested, and the House thereafter accepted the Senate amendment.

This appropriation was soon exhausted and again an estimate was submitted to Congress by the President in the amount of \$4,400,000, and this time the House Committee on Appropriations reversed its previous stand and included the amount in the regular appropriation bill for the Department of Labor, H. R. 2935, which subsequently became a law. In this bill the program was extended to include as beneficiaries the wives and infants of enlisted men of the first, second and third grades. Previously the wives and infants of enlisted men in only the fourth, fifth, sixth and seventh grades were entitled to benefits. The Congress, too, attached to this authorization for appropriation a proviso restricting the Children's Bureau from promulgating regulations relating to the care of obstetric cases which discriminates between persons licensed under state law to practice obstetrics. This proviso was incorporated in the law at the instance of osteopaths. There followed some misunderstanding of the effect of the proviso, and the Children's Bureau submitted the matter to the Attorney General of the United States for an opinion. That official advised the Children's Bureau that the proviso meant only that that bureau could not itself set up standards to be met by participating physicians, that such standards thereafter were to be established by the several states in plans submitted to the Children's Bureau for approval. The result is that a state may, if its laws permit, restrict participation in the program to practitioners who are professionally qualified to render adequate obstetric care to the wives of servicemen and the Children's Bureau may approve a plan so limiting participation.

Early in the fall of last year it became evident that additional appropriations would be necessary to finance the program, and the President submitted a third supplemental estimate to the Congress in the amount of \$18,600,000 for allotments to the states. When it became known that this estimate was to be submitted to Congress, a letter was sent to each Congressman and to each Senator embodying a copy of the resolution adopted by the House of Delegates last June, urging that the method of making available these federal funds be changed so that the money could be paid to the wives of servicemen on an allotment basis. When the House joint resolution proposing an additional appropriation came before the House of Representatives, an amendment was offered to put the program on an allotment basis. After considerable discussion, however, this amendment was rejected by a vote of 115 to 8. The joint resolution was thereafter passed by the House and Senate and signed by the President. This latest appropriation measure restricts the beneficiaries to the wives and infants of servicemen in the fourth, fifth, sixth and seventh grades with a saving clause under which payments out of the appropriation could be made for commitments made prior to Oct. 1, 1943 in cases of wives and infants of enlisted men in grades one, two and three.

In opposition to providing allotments to the wives of servicemen, it was contended that in many instances the money allotted would be used by the wives to meet "immediate needs" rather than used to procure the needed obstetric and pediatric care. The same argument may also be advanced against any cash allotment now being made to the wives of servicemen. Present allotments, presumably, are made to enable the wives of servicemen to obtain the necessities of life. They may be expended for frivolous purposes, thereby defeating the purpose of the government to help the families to obtain food, clothing and shelter. It was contended, too, that the allotment program would cost at least \$30,000,000 a year more than the service program. This contention was based on the assumption that 645,000 wives of enlisted men will have babies during the present fiscal year and that approximately half of the number will apply for help under the present program. The assumption was made that if the cash allotment plan was put into effect all of the 645,000 wives would be entitled to the allotment, and on the basis of this assumption it was estimated that the cost of the allotment program would exceed the service program in the indicated amount. It may be pointed out that all of the 645,000 wives who will have babies during the present fiscal year are now entitled, on request, to the benefits of the program that obtains. The wives receive the benefits, however, only if they ask for them, and about 50 per cent have so requested.

The cash allotment plan could be put on the same basis as the service plan; namely, it could be made available only to those wives who request it.

It was contended, further, that a flat grant would necessarily have to be made without regard to individual medical needs or the cost of care and that such grants would not be sufficient to cover extraordinary medical expenses. An allotment, however, could be based on individual needs and could be made to cover whatever expenses were incurred by the wife of a serviceman to procure necessary medical and hospital care. The objectors to the allotment proposal pointed out that, even though the wife of a serviceman had the necessary money to procure needed care, she might not be able to obtain it by reason of inability to obtain the services of a physician. Under the existing plan, it was contended, a duty devolved on state health agencies to aid in obtaining the services of a physician if the wife was unable to procure them. Machinery could be set up in each state, however, to help the wife of a serviceman to obtain necessary care if a cash allotment scheme was put into operation.

It was finally contended that if a flat grant was made to the wife there would be no assurance that the fees charged by the physician or hospital would be within the cash grant. In the case of other cash allotments there is no assurance that in individual cases they will be sufficient to provide the necessities of life for the families of the servicemen. Furthermore, practically all state medical associations have approved the general program of providing obstetric and pediatric care for the wives and infants of servicemen, and such state associations could and would evolve a setup to reduce to a minimum the cases in which a few physicians might undertake to overcharge. The greater proportion of physicians would patriotically accept the amount allotted to the wife of a serviceman as reimbursement for his services if such amount represented the most that the wife of a serviceman could pay.

Funds for Relocated Physicians.—The problem of relocating physicians to critical areas has been receiving serious consideration for some time. Despite all the efforts that have been made, however, there apparently still remain areas in which the urgent need for physicians has not been met. In an effort to meet this need, the President on October 1 requested an appropriation of \$1,000,000 to enable the United States Public Health Service to supply the needed medical care in these areas through the use of its own personnel or by means of monthly stipends to induce private practitioners of medicine to move into them.

This federal fund, it was contemplated, was to be used by the Surgeon General of the Public Health Service when requested by a state department of health (1) to assign medical and dental personnel of the service to areas found to be in critical need, the services of such personnel to be furnished the public in accordance with schedules of fees approved by the state health departments and the Surgeon General of the Public Health Service or (2) to enter into agreements with private practitioners of medicine and dentistry under which, in consideration of the payment to them of a relocation allowance of not to exceed \$250 per month for three months and the actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist would agree to move to and engage in the practice of his profession in the critical area for not less than one year.

The House Committee on Appropriations initially refused to include the estimates in an appropriation bill. The committee expressed hesitation in inaugurating a program of this character with federal funds to provide direct medical attention to the civilian population with physicians paid by the federal government. The committee thought that out of the cooperative efforts of the federal government, the medical associations, the state departments of health and the communities themselves there should come a concerted and spontaneous effort to provide needed medical care in the critical areas. The committee said:

Most of it [the need] is in war industry areas and it is inconceivable that such communities working with the industries, the affected population, and state and local authority, cannot inaugurate and maintain an adequate public spirited program, financially sound, to serve this need. If the affected areas cannot and will not solve their local needs it may be necessary for the federal government in the interest of the general public health to step in but until then the committee feels that federal funds should be withheld under the contemplated procedure.

When the First Supplemental National Defense Appropriation Bill for 1944 (H. R. 3598) reached the floor of the Senate, an amendment was offered by Senator Russell of Georgia to authorize a part of the appropriation requested by the President. This amendment was accepted by the Senate and thereafter by the House, with some modifications suggested by a conference committee. As finally enacted, the sum of \$200,000 was made available to provide medical care in the critical areas, instead of the \$1,000,000 initially requested. The Public Health Service may not assign its own personnel to such areas but must use the money to pay relocation allowances not to exceed \$250 a month for three months plus moving expenses to private practicing physicians and dentists who will agree to relocate. The local community requesting help must assume 25 per cent of the cost of procuring it, and the law specifically provides that the relocated physician or dentist must obtain a license to practice in the state to which he moves. Procedures are now under way by the United States Public Health Service to put into operation the program authorized by this federal appropriation.

Additional Hospital Facilities for Veterans.—Proposals are pending in Congress contemplating a vastly expanded program for the construction of hospital facilities for veterans of World War II. In an appropriation bill approved Dec. 23, 1943 the Congress appropriated \$10,356,000 to provide 3,950 additional beds for neuropsychiatric patients. On Jan. 29, 1944 the President transmitted to Congress a request for an additional \$30,000,000 for the construction of 9,252 additional hospital beds for neuropsychiatric patients. In addition, another appropriation of \$7,374,500 has been made available for major alterations and repairs and for construction not providing additional beds. Representative Rogers of Massachusetts has introduced a bill, H. R. 3935, proposing an appropriation of \$500,000,000 to provide additional hospital and outpatient dispensary facilities for veterans.

The American Legion has sponsored the introduction in Congress of legislation to enact a Servicemen's Aid Act of 1944, commonly referred to as the G. I. bill. This legislation was introduced in the Senate by Senator Clark as S. 1767, for himself and seventy-eight other senators. It declares the Veterans' Administration to be an agency of the United States vital and essential to the successful prosecution of the war and entitled to priorities second only to the War and Navy Departments; directs the Administrator of Veterans' Affairs and the Federal Board of Hospitalization to expedite the construction of additional hospital facilities for war veterans and to enter into agreements and contracts for the use of suitable Army and Navy hospitals by the Veterans' Administration after cessation of hostilities and after such institutions are no longer needed by the armed services; appropriates \$500,000,000 for the construction of additional hospital facilities; authorizes the Administrator of Veterans' Affairs and the Secretary of War and the Secretary of the Navy to enter into agreements for the mutual use or exchange of use of hospital and domiciliary facilities; provides for the transfer or detail of commissioned or enlisted personnel from the armed forces to the Veterans' Administration and provides for the postwar education and training of any person who served in the active military or naval service on or after Sept. 16, 1940 and prior to the termination of the present war and whose education or training was interrupted or prevented by service or who requires a refresher or retraining course to fit him for employment or profession. This bill passed the Senate without a dissenting vote and is pending in the House Committee on World War Veterans' Legislation.

From 1919 through the fiscal year ended June 30, 1943 the Congress has specifically appropriated the sum of \$174,688,267 for new hospital, domiciliary and outpatient dispensary facilities for veterans. In addition, since 1923 there has been expended from regular fiscal funds available to the Veterans' Administration the sum of \$26,572,347 for permanent improvements and extensions to facilities. The Veterans' Administration, furthermore, has been allotted for improvements and new construction the sum of \$3,041,650 from the National Recovery Act of 1933 and the sum of \$13,268,200 from the Public Works Administration Appropriation Act of 1938. An additional sum of \$1,133,448 was expended for improvements from the general post fund established by the former National Home for Disabled

Volunteer Soldiers. In all, a total of \$218,703,912 has been made available for construction purposes during the past twenty-four years.

On June 30, 1943 the Veterans' Administration was operating hospital facilities at ninety-three locations in forty-five states and the District of Columbia, having a capacity of 61,764 beds. In addition there have been set aside 18,455 beds for domiciliary care and facilities under the jurisdiction of the Veterans' Administration. As of June 30, 1943 the total hospital load of the Veterans' Administration was 56,897, including 45,653 veterans of World War I, 5,132 veterans of World War II, and the remainder were veterans of other wars and certain miscellaneous beneficiaries.

Of the patients in hospitals at the close of the year, 8.82 per cent were under treatment for tuberculosis, 64 per cent for neuropsychiatric diseases and 27.18 per cent for general medical and surgical conditions.

Since June 7, 1924, when hospitalization was first authorized for veterans of all wars without regard to the origin of their disabilities, 1,862,965, or more than 80 per cent of all admissions, have been for the treatment of disabilities not connected with service. Over 92 per cent of the admissions for the fiscal year ended June 30, 1943 were on account of non-service connected disabilities. In this connection it is important to note that of the 5,132 veterans of World War II hospitalized during the year only 2,332 were under treatment for diseases or injuries determined to be of service origin.

The Veterans' Administration is authorized to provide hospitalization for all veterans, including veterans of World War II, for non-service connected disabilities so far as existing governmental facilities will permit. At the close of the fiscal year, on June 30, 1943, 74.98 per cent of the United States veterans under hospitalization were receiving treatment for disabilities not of service origin.

Vocational Rehabilitation for Veterans and Civilians.—In October 1942 the President sent a special message to Congress advocating an expanded federal-state program for vocational rehabilitation to cover both veterans and civilians and to be administered by a single rehabilitation service in the Federal Security Agency. Bills were introduced in the Seventy-Seventh Congress to carry out the President's recommendation, but no final action was taken on them, owing in part to the opposition of veterans to a combined veteran-civilian rehabilitation program administered by the Federal Security Agency. Shortly after the Seventy-Eighth Congress convened, Senator LaFollette of Wisconsin and Representative Barden of North Carolina sponsored legislation to enact a Vocational Rehabilitation Act Amendments of 1943. This legislation included both veterans and civilians and contemplated the creation in the Federal Security Agency of an Office of Vocational Rehabilitation as the administrative agency. Opposition to the program by the veterans continued, and in the end all reference to the rehabilitation of veterans for disabilities due to or accelerated by service was stricken from the Barden-LaFollette legislation and a separate law enacted for the veterans, leaving the administration of rehabilitation in the Veterans' Administration. Following this action the Barden-LaFollette legislation was passed.

Briefly, the law relating to the rehabilitation of veterans, Public Law No. 16, affords vocational rehabilitation through the Veterans' Administration to those veterans of World War II who served in the active military or naval service at any time after Dec. 6, 1941 and prior to the termination of the present war who (1) were honorably discharged from such service, (2) have disabilities incurred in or aggravated by such service for which pension is payable or would be payable but for the receipt of retirement pay and (3) are in need of vocational rehabilitation to overcome the handicap of such disability. No course of training may extend beyond a period of four years.

An analysis of the Barden-LaFollette Act (Public Law No. 113) was prepared by the Bureau and published in THE JOURNAL, Oct. 30, 1943. The program will be administered, from a federal level, by an Office of Vocational Rehabilitation in the Federal Security Agency. On a state level it will be administered by state boards of vocational education or by state rehabilitation commissions except in the case of rehabilitation of the blind. If under a state law the state blind commission or other agency which provides assistance to the adult blind is

authorized to provide vocational rehabilitation, the state plan will be administered by such state blind commission or other state agency so far as the plan applies to vocational rehabilitation of the blind. A state plan, to be approvable by the federal agency, must provide rehabilitation to classes of employable individuals defined by the Administrator of the Federal Security Agency and to any civil employee of the United States disabled in the performance of his duty. Such rehabilitation must be provided too to war disabled civilians whose disabilities have resulted, without personal misconduct, from injury or disease or from an aggravation of a preexisting injury or disease incurred in line of duty while serving at any time after Dec. 6, 1941 and prior to the termination of the war (1) in the Aircraft Warning Service, (2) as a member of the Civil Air Patrol, (3) as a member of the United States Citizens' Defense Corps in the protective services in civilian defense, (4) as a registered trainee taking training for such protective services or (5) as an officer or member of the crew of a vessel owned or chartered by the Maritime Commission or the War Shipping Administration or operated under charter from such commission or administration.

The federal government will participate financially in the program as follows: (1) It will reimburse a state for all of the administrative expenses of the program, (2) it will reimburse a state in full for the cost of rehabilitation of war disabled individuals and (3) it will pay half the cost of the rehabilitation of other disabled persons. The new law provides for the physical restoration as well as the vocational rehabilitation of the disabled. A state plan must provide corrective surgery or therapeutic treatment necessary to correct or substantially modify a physical condition which is static and constitutes a substantial handicap to employment but is of such nature that such correction or modification should eliminate or substantially reduce the handicap within a reasonable length of time. Necessary hospitalization will be provided, in no case to exceed ninety days, in connection with the surgery or treatment. Prosthetic devices will also be furnished. A state plan must provide maximum schedules for fees for surgery, therapeutic treatment, hospitalization and medical examination and for prosthetic devices to be furnished rehabilitants. Such schedules will be subject to the approval of the Administrator of the Federal Security Agency.

The federal law does not require a state to limit rehabilitation procedures to persons financially unable to pay for their rehabilitation. A state may not impose a showing of financial need on a war disabled civilian or on a civil employee of the United States. Unless a state does impose a financial need requirement on a rehabilitant, however, with the exceptions just noted, who is furnished corrective surgery or therapeutic treatment or hospitalization, the state will be required to assume the full expense with respect to such services.

A national Rehabilitation Advisory Council has been created to advise the Office of Vocational Rehabilitation in the Federal Security Agency in connection with the expanded federal-state rehabilitation program. Regulations that have been issued provide for the creation of advisory committees on state levels.

Medical Care for Recruited and Migrant Farm Workers.—Under date of April 29, 1943 the President approved as Public Law No. 45 a bill appropriating the sum of \$26,100,000 to be expended by the Administrator of Food Production and Distribution for assisting in providing an adequate supply of workers for the production and harvesting of agricultural commodities essential to the prosecution of the war. A certain part of this appropriation was earmarked for allotments to the several states for expenditure by the agricultural extension services of the land-grant colleges. The purposes for which expenditures from these allotments could be made included the providing of health and medical services for recruited farm workers and their families. The President under date of October 28 recommended an additional appropriation of \$35,000,000 for this program, and a joint resolution was introduced in the House, H. J. Res. 208, which proposed an additional appropriation of \$27,000,000 plus the unexpended balances remaining from the initial appropriation. When this joint resolution reached the floor of the Senate an amendment was adopted under which expenditures from the allotments to provide medical service to migratory agricultural workers and their families who, without recruitment or assis-

tance of any government agency, have entered an area served by a labor supply center and have engaged in agricultural work and to whom adequate health and medical services are not otherwise available in the area where they are working. This amendment was subsequently accepted by the House, and the joint resolution has been approved by the President as Public Law No. 229.

Construction of Community Facilities, Including Hospital and Medical Centers.—The Seventy-Seventh Congress enacted legislation, referred to generally as the Lanham act, appropriating \$150,000,000 for the construction of defense public works, or community facilities, made necessary by national defense activities, including schools, waterworks, sewers, sewerage, garbage and refuse disposal facilities, public sanitary facilities, works for the treatment and purification of water, hospitals and other places for the care of the sick, recreational facilities, and streets and access roads. Subsequently an additional appropriation of \$150,000,000 was made available by that Congress. In the Seventy-Eighth Congress, legislation was introduced by Representative Lanham authorizing an additional \$200,000,000 for the construction of such facilities and Congressional action was completed on the legislation, which was approved by the President July 15, 1943 as Public Law No. 150.

Selective Training and Service Act Amendment.—The President approved under date of Dec. 5, 1943 an act amending the Selective Training and Service Act of 1940 (Public Law No. 197). This law, among other things, directed the President to appoint a commission of five qualified physicians, one an Army officer, one a Navy officer and three civilian physicians not employed by the federal government, to examine the physical, mental and moral qualification requirements for admission to the Army, Navy and Marine Corps and to recommend to the President any changes therein which the commission believes can be made without impairing the efficiency of the armed services. The Director of Selective Service will be required to reexamine rejectees, including those previously discharged from the armed services because of physical disability, to determine if they may qualify for service under any new standards that may be established. This law provides too that no individuals shall be called for induction, ordered to report to induction stations or be inducted because of their occupations or by occupational groups or by groups in any plant or institutions, except pursuant to a requisition by the land or naval forces for persons in needed medical professional and specialist categories.

Nurse Training Program.—At the request of the Federal Security Agency the Congress enacted legislation, commonly referred to as the Bolton act, to provide a nurse training program to be administered by the United States Public Health Service. The program will remain in effect for the duration of the war and will supply nurses for the armed forces, governmental and civilian hospitals, health agencies and war industries. Federal funds authorized by this act are used to provide tuition, stipends, maintenance, fees, distinctive insignia and uniforms to student nurses undergoing training in approved institutions. It was estimated at the time this legislation was before Congress that the program, based on a twenty-four month curriculum, would involve a federal expenditure of \$59,290,000 for 1944, \$62,550,000 for 1945 and \$68,360,000 for 1946, or a total of \$190,200,000 for the three year period. Based on a thirty month curriculum, the estimated federal expenditure varied slightly. These estimates were predicated on the assumption that there would be 101,000 nurses under training in 1944, 125,525 in 1945 and 141,000 in 1946. An initial appropriation of \$45,000,000 for this program was included in the regular appropriation bill for the Federal Security Agency. An additional \$7,500,000 was made available in the First Supplemental National Defense Appropriation Act, 1944. A request for an additional \$2,700,000 was transmitted to the Congress on February 4 of this year and is pending in the House Committee on Appropriations.

Distinct Color for Powdered Insecticides.—Companion bills pending in the Congress, S. 897 and H. R. 2383, propose to amend the Insecticide Act so as to provide that any white powder insecticide or fungicide containing arsenic in its elemental form or in any of its combinations, or fluorine in any of its combinations, shall be deemed to be adulterated unless it is distinctly colored in accordance with regulations promulgated by

the Secretary of Agriculture. The Secretary of Agriculture will be authorized to grant exemptions in particular cases if he determines it to be unnecessary that the insecticide or fungicide be colored in order to protect the public health. The Senate bill has been favorably reported by the Senate Committee on Commerce. The House bill is pending in the House Committee on Interstate and Foreign Commerce.

This legislation was recommended to the Congress by the Department of Agriculture as necessary to put a stop to the poisoning of people through the careless handling of white powdered insecticides and fungicides. In the letter transmitting the legislation to Congress, it was pointed out that in a New York hospital serious illness of 45 persons and two deaths occurred through eating food accidentally contaminated with sodium fluoride insecticide, that in Pittsburgh at a Salvation Army community center dinner 57 persons were poisoned, 12 of whom died as a result of eating food prepared from flour contaminated with an insecticide and that at a state hospital in Oregon 467 inmates were made ill, 50 of whom died, through eating food accidentally contaminated with sodium fluoride.

Study of Human Nutrition and the Nutritive Values of Food.—A bill introduced in the House of Representatives, by request, by Representative Pace of Georgia, H. R. 2276, provides for the development of better diets and an improved nutritional status for the people of the United States. The bill is pending in the House Committee on Agriculture and would authorize during the present emergency an annual appropriation of \$1,000,000 for allotment to the states to pay the necessary expenses of conducting studies of the urgent problems of human nutrition and of the nutritive values of food and to provide the information needed to assure the best use of the food supply in the emergency, such studies to be conducted by the agricultural experiment stations established in the several states. Not to exceed 2 per cent of the sums appropriated will be used for administrative purposes. Ninety-eight per cent of the sum appropriated, it is contemplated, will be paid to the several states as follows: (1) the sum of \$10,000 to each state and (2) the sum remaining will be paid to the several states in the proportion that the total population of each bears to the total population of all the states as determined by the last decennial census. In addition, an annual appropriation of \$500,000 will be authorized for the use of the Secretary of Agriculture to make similar studies and to cooperate with the several experiment stations in such research.

Investigation of the Educational and Physical Fitness of the Civilian Population as Related to National Defense.—A Senate resolution has been agreed to, authorizing the Senate Committee on Education and Labor or a subcommittee thereof to make a full and complete study and investigation regarding the distribution and utilization of medical personnel, facilities and related health services and the deficiencies in health and education among persons otherwise fit for service with the armed forces and persons otherwise fit to be employed to the best advantage in agriculture, industry and other activities. The Senate Committee appointed a subcommittee to carry out the investigations, composed of Senator Pepper of Florida as chairman, Senator Thomas of Utah, Senator Tunnell of Delaware, Senator LaFollette of Wisconsin and Senator Wherry of Nebraska. The investigations of this subcommittee are under way.

Treatment of Selective Service Registrants Infected with Venereal Disease.—Legislation is pending, introduced by Senator LaFollette of Wisconsin as S. 1320, to provide for the treatment of Selective Service registrants infected with venereal disease. This legislation would direct the Surgeon General of the Public Health Service to provide, on the request of state and local health authorities, (1) for the hospitalization, treatment and subsistence in hospital facilities operated by the Public Health Service of persons registered under the Selective Training and Service Act who are found to be infected with venereal disease and (2) for the transportation of such persons between their homes and such facilities whenever necessary.

Employment of Alien Physicians by Bureau of Indian Affairs.—A pending bill, H. R. 2657, introduced by Representative O'Connor, Montana, and pending in the House Committee on Indian Affairs, provides that whenever the Secretary of the Interior shall find that the Bureau of Indian Affairs cannot obtain the services of a sufficient number of physicians and

dentists who are citizens of the United States adequately to perform the functions of the bureau with respect to the conservation of the health of Indians, he or his authorized representative may, with the approval of the Civil Service Commission, engage the services, by contract or otherwise, of competent physicians and dentists who are not citizens of the United States, for periods of time not to extend beyond the termination of the present war and for six months thereafter.

Permanent Medical Corps in the Veterans' Administration.—Representative Rogers of Massachusetts has introduced legislation proposing the establishment of a permanent medical corps in the Veterans' Administration to be known as the Veterans' Administration Medical Corps and which will constitute a component part of the military forces of the United States. This legislation, H. R. 2820 and H. R. 3623, is pending in the House Committee on World War Veterans' Legislation. Since its introduction the President has directed that the medical personnel of the Veteran's Administration be militarized.

Bureau of Vital Records in the United States Public Health Service.—A bill is pending in the Senate Committee on Commerce, S. 1096, to establish a Bureau of Vital Records in the United States Public Health Service. Public hearings have been concluded on the bill, which would create in the Public Health Service a Bureau of Vital Records to be under the immediate supervision of an Assistant Surgeon General. This bureau would be administered, the bill provides, for the purpose of coordinating the vital records and vital statistics offices of the states into a cooperative vital records system, including improvement of the registration procedures of the states for the purpose of guaranteeing complete and accurate registration, preservation and availability of certificates and related records of births, deaths, marriages, divorces, legal separations, annulments, changes of name, adoptions and legitimations within the United States. The Assistant Surgeon General would compile, analyze and have printed the statistics of and reports on births, deaths, marriages and divorces obtained from data from the registration records of the states for which plans have been submitted to and approved by the Surgeon General of the Public Health Service.

To assist states and their political subdivisions in establishing and maintaining vital records services, including the training of personnel for state and local vital records work, the bill authorizes the appropriation of a sum not to exceed \$2,000,000 for each fiscal year beginning with the fiscal year ending June 30, 1944. This appropriation, it is contemplated, will be allotted to the states on the basis of (1) the population, (2) the special vital records problems and (3) the financial needs of the respective states. The bill would transfer the functions of the Division of Vital Statistics of the Bureau of the Census to the new Bureau to be created in the United States Public Health Service.

Investigation of Aid Available to the Physically Handicapped.—The House Committee on Labor would be authorized under a pending House resolution, H. Res. 230, (1) to conduct studies and investigations of the extent and character of aid now given by the federal, state and local governments and private agencies to the physically handicapped, (2) to study and investigate the diffusion within the United States of such aid to the physically handicapped and (3) to investigate employment opportunities for the physically handicapped and other questions in relation thereto which would aid the Congress in the formation of any necessary remedial legislation. This resolution is pending in the House Committee on Rules.

Medical Care for Recipients of Public Assistance.—A pending bill, introduced by Representative Coffee of Washington, H. R. 2947, would authorize an appropriation of \$18,000,000 for the fiscal year ending June 30, 1945 and for each fiscal year thereafter a sum sufficient to carry out its purposes, for making payments to the states which have submitted and had approved by the Social Security Board state plans for furnishing medical care to the recipients of public assistance. The term "medical care" is defined to include such services, supplies and appliances for the diagnosis, cure, mitigation, treatment or prevention of disease, or for the purpose of affecting any structure or function of the body, as may be approved in regulations of the Social Security Board. Medical care, the bill provides, may be sup-

plied either by the state agency administering or supervising the administration of the plan or by other agencies of the state or political subdivisions, in accordance with agreements authorized in regulations of the board. Such care may be provided directly by the state agency or such other agencies or indirectly through payments by such state agency or such other agencies to the person or persons furnishing such care. If a state so desires, under the provisions of the pending legislation it may provide in its plan for the supplying of medical care to the needy members of the households of recipients of public assistance.

Social Security for Employees of Religious, Charitable, Educational and Certain Other Organizations.—A new title to the Social Security Act, title II-A, would be added by H. R. 3204, to be designated "Federal Old-Age and Survivors Insurance for Employees of Religious, Charitable, Educational, and Certain Other Organizations." Title II of the act extends federal old age and survivors insurance benefits to present beneficiaries. Similar benefits would be extended by title II-A to employees of organizations now exempt. While the existing provisions of the Social Security Act impose taxes on employers and employees, the proposed title II-A contemplates that payments to be made by exempt organizations and by their employees to the trust fund to be created will be premiums, not taxes.

Optometrists and Morticians as Commissioned Officers in Army and Navy Medical Corps.—A bill authorizing the appointment of optometrists as commissioned officers in the Medical Corps of the Army and in the Medical Corps of the Navy has been introduced by Representative Peterson of Florida, H. R. 4063. It is pending in the House Committee on Military Affairs. It would authorize the President to appoint as commissioned officers optometrists who are regularly licensed to practice as such in any state or in the District of Columbia.

Another bill, introduced by Representative Peterson of Florida as H. R. 3806 and pending in the House Committee on Military Affairs, would authorize the appointment of morticians as commissioned officers in the Medical Corps of the Army and the Medical Corps of the Navy.

Postwar Educational Opportunities for Service Personnel.—Under date of October 27 the President transmitted to Congress a preliminary report of the Armed Forces Committee on Postwar Educational Opportunities for Service Personnel. The President expressed full agreement with the recommendations made by the committee that the federal government should make it financially feasible for every man and woman who has served honorably for a minimum period in the armed forces since Sept. 16, 1940 to spend a period up to one calendar year in a school, college or technical institution or in actual training in industry so that he can further his education, learn a trade or acquire the necessary knowledge and skill for farming, commerce, manufacturing or other pursuits. The committee further recommended that the federal government should make it financially possible for a limited number of ex-service men and women selected for their special aptitudes to carry on their general, technical or professional education for a further period of one, two or three years. A number of bills have been introduced to provide the recommended postwar educational opportunities for veterans. One of these, S. 1509, was favorably reported by the Senate Committee on Education and Labor on February 9. It is pending at the present time in the Senate.

Military Rank for Members of Navy and Army Nurse Corps.—An act approved July 3, 1942 provided relative rank for the superintendent, assistant superintendents, chief nurses and nurses of the Navy Nurse Corps and provided that members of the corps shall have authority in and about naval hospitals and other medical activities as regards medical and sanitary matters and all other work within the line of their duties, next after commissioned officers of the Medical Corps and Dental Corps of the Navy. An act approved Dec. 22, 1942 provided that during the present war and for six months thereafter the superintendent and all other members of the Navy Nurse Corps shall have relative rank, pay and allowances for corresponding relative ranks in the Army Nurse Corps.

Officers of the Women's Reserve of the Navy, Marine Corps and Coast Guard have actual rank. The duties of members of

the Navy Nurse Corps bring them into contact with officers of these Women's Reserves, and the distinction between relative and actual rank has proved to be a handicap to members of the Navy Nurse Corps in time of war. To remove that handicap, legislation has been introduced, H. R. 2976, which provides that during the present war and for six months thereafter the superintendent and all other members of the Navy Nurse Corps entitled under existing laws to relative rank shall have and shall be designated by the rank which corresponds to the relative rank. The enactment of this legislation was recommended by the Navy Department, and the bill has passed the House and Senate.

A similar situation exists with respect to members of the Army Nurse Corps, and comparable legislation has been introduced to grant military rank to members of that corps, H. R. 3718. This bill is pending in the House Committee on Military Affairs.

Service in the Medical Reserve Corps in Relation to Pay.—Pending legislation, H. R. 1506, proposes to amend the Pay Readjustment Act of 1942 so as to authorize service in the Medical Reserve Corps to be counted for pay purposes. The necessity for this amendment arose out of a decision by the Comptroller General that former members of the Medical Reserve Corps could not include the time they served in that corps in the computation of their pay. This bill has passed the House of Representatives.

College and University General Extension Act.—Senator Thomas of Utah has introduced a bill, S. 1670, to promote the welfare of the people by establishing a publicly supported adult education program stemming from the state universities and land-grant colleges, by setting up a college and university adult education extension program separate from but supplemental to the cooperative agricultural extension service authorized by previous acts, thus making broadly available to community groups and individuals the full educational resources and research findings of these public institutions of higher learning. This bill, if enacted, will be administered by the United States Office of Education.

For the fiscal year ending June 30, 1945 an appropriation of \$8,000,000 is contemplated, for the fiscal year ending June 30, 1946 an appropriation of \$12,000,000, for the fiscal year ending June 30, 1947 an appropriation of \$16,000,000, for the fiscal year ending June 30, 1948 and annually thereafter an appropriation of \$20,000,000. The general extension program embraced by the bill will serve individuals whose training and education may have become obsolete through economic, social and scientific change, persons desiring to know more of the problems of commerce and industry as well as problems pertaining to the education of workers, also those interested in gaining knowledge of public safety, sanitation, health, nutrition, recreation, housing, government, town planning, school facilities and social welfare services.

Industrial Health Under Jurisdiction of Labor Departments.—There is pending in the House of Representatives, with a favorable committee report, a bill introduced by Representative Norton, New Jersey, H. R. 4371, authorizing an annual appropriation of \$5,000,000 to be allotted by the United States Department of Labor to state agencies administering labor laws for use by such agencies in establishing and maintaining safe and proper working conditions "and in the preparation, promulgation, and enforcement of regulations to control industrial health hazards." State plans must be developed jointly by the state agencies administering labor laws and the federal Division of Labor Standards of the Department of Labor and must be approved by the Secretary of Labor. The bill provides that in the operation of the plans the available services and facilities of public health authorities in the field of industrial hygiene shall be utilized. This bill, if enacted, would seem to confer on labor departments jurisdiction over industrial health problems and is therefore contrary in principle to the recommendations made by the House of Delegates at the Kansas City session and by the Council on Industrial Health in a resolution adopted July 8, 1939 and thereafter approved by the Board of Trustees. In this resolution the Council expressed the belief that the interests of the industrial workers will be best served

by continued concentration of industrial hygiene in the federal and state health departments. The foregoing resolution was in accord with the policy adopted by the House of Delegates in 1936.

Income and Victory Taxes.—An analysis of the current tax payment act of 1943 was prepared by the Bureau and published in *THE JOURNAL*, August 14. This analysis indicated the requirements of the new pay-as-you-go law so that physicians were promptly informed and could more readily comply with them. The Bureau's annual statement with respect to the physician's federal income and victory tax was published in *THE JOURNAL*, Jan. 29, 1944. A new revenue act was passed by the Congress over the veto of the President, February 25. A statement with respect to the changes effected by the new law was published in the March 4 issue of *THE JOURNAL*.

The Wagner-Murray-Dingell Bill.—Companion bills are pending in the Congress to engraft on the existing social security program a system of compulsory sickness insurance involving inevitable federal control of the practice of medicine and a diluted quality of medical care. The Senate bill, S. 1161, introduced by Senator Wagner of New York and Senator Murray of Montana, is pending in the Senate Committee on Finance. The House bill, H. R. 2861, introduced by Representative Dingell of Michigan, is pending in the House Committee on Ways and Means. An analysis of this legislation was prepared by the Bureau and published in *THE JOURNAL*, June 26, 1943.

Under date of October 4, Secretary of the Treasury Morgenthau advocated before the House Committee on Ways and Means, in connection with hearings on the then pending tax legislation, a broadening of the social security program "to cover practically all persons in the nation, to increase employment insurance benefits, and to provide benefits for temporary disability and hospitalization." He did not specifically mention the Wagner-Murray-Dingell bill but obviously had that bill in mind when he referred to bills "already introduced in Congress."

The Eighth Annual Report of the Social Security Board, 1943, suggested extensive revisions and expansions in the social security program, stressing the belief that provisions for health and medical care have an important place in any comprehensive and adequate program of social security. It recommended the establishment of a single comprehensive system of social insurance with provision for compensating a reasonable portion of wage loss due to unemployment, sickness and disability, old age and death, and a considerable part of the expense of hospital and medical services. It recommended that matching federal funds be made available to pay medical agencies and practitioners for the cost of medical services and supplies provided for recipients of assistance. The federal reimbursement, the board indicated, might well be based on combined costs incurred within a state for medical services to recipients under all assistance programs. If arrangements are adopted for medical services to be provided through a comprehensive social insurance system, the board said, state assistance agencies could collaborate effectively with the insurance authorities by making equitable payments so that these services would be available to assist the recipient under whatever arrangements had been developed with physicians, hospitals and others to furnish services for the insured population.

President Roosevelt sent a special message to the Congress on the state of the Union, Jan. 11, 1944. In it he referred to a second bill of rights under which a new basis of security and prosperity could be established for all, regardless of station, race or creed. He emphasized the right to adequate medical care and the opportunity to achieve and enjoy good health and the right to adequate protection from the economic fears of old age, sickness, accident and unemployment. The President asked the Congress to explore the means for implementing this second bill of rights and suggested that if "no adequate program of progress is evolved, I am certain that the nation will be conscious of the fact."

Despite these official points of view, the respective Congressional committees before which the legislation is pending give no present indication of scheduling hearings at an early date.

The report on the Wagner-Murray-Dingell bill adopted by the House of Delegates of the American Bar Association, Feb.

28, 1944 and published in *THE JOURNAL*, March 11, deserves special mention and commendation. As stated in an editorial in the same issue of *THE JOURNAL* in which the report was published, the concluding paragraph of that report should be emphasized and reemphasized:

The Constitution of the United States is designed to protect the citizens of this republic in the exercise of the rights of free men. The provisions of that instrument can be rendered impotent when our citizens, for the sake of an apparent immediate benefit, surrender to their government such direct control over their lives that government, by imposing a constant fear on them of having those benefits withheld or withdrawn, can compel from them obedience and subservience to its dictates.

Summary

Postwar Medical Licensure.—Medical practice acts may impose hardships on recent graduates whose entry into the military or naval service prevents licensure. It is timely that such acts be reviewed.

Morphine Substitute.—A synthetic coal tar product has recently appeared on the markets of the United States under the trade name of Demerol. Because of its habit forming characteristics the United States Commissioner of Narcotics has recommended that steps be taken to bring it under both state and federal control.

Lectures on Medical Jurisprudence.—Periodic series of lectures on medical jurisprudence, such as those scheduled recently in Philadelphia and in Los Angeles, constitute important channels for the diffusion of information in this field. The development of such channels should be given thoughtful consideration by medical societies.

Federal Legislation.—Congressional action has been completed on legislation providing for the appointment of female physicians in the Medical Corps of the Army and Navy, creating a Pharmacy Corps in the Medical Department of the Army and reorganizing the United States Public Health Service.

Appropriations totaling \$24,200,000 have been made available for allotments to the states to provide obstetric and pediatric care for the wives and infants of servicemen. The sum of \$200,000 has been appropriated for the relocation of physicians to critical areas.

Proposals are pending in Congress contemplating a vastly expanded program for the construction of additional hospital facilities for veterans of World War II. Since June 7, 1924, when hospitalization was first authorized for veterans without regard to the origin of their disabilities, more than 80 per cent of all admissions have been for treatment of disabilities not connected with service.

Laws have been enacted providing for the vocational rehabilitation of veterans, under the direction of the Veterans' Administration, and of disabled civilians, under the direction of the Office of Vocational Rehabilitation in the Federal Security Agency.

Additional funds have been made available under the Lanham act for the construction of community facilities, including hospitals and other places for the treatment of the sick.

Congress has authorized the providing of medical care for recruited and migrant farm workers.

Other pending legislation contemplates a codification of the federal laws relating to the United States Public Health Service, a study of human nutrition and nutritional values of food, the treatment of Selective Service registrants infected with venereal disease, the employment of alien physicians by the Bureau of Indian Affairs, a permanent Medical Corps in the Veterans' Administration and the creation of a Bureau of Vital Records in the Public Health Service.

At the request of the Federal Security Agency, the Congress enacted legislation to provide a nurse training program to be administered by the Public Health Service, and \$52,500,000 has been appropriated to date to finance that program.

A special Senate committee has been created to investigate the education and physical fitness of the civilian

population as related to national defense. A pending resolution would authorize investigations of the aid available to the physically handicapped.

The commissioning of optometrists and morticians as officers in the Army and Navy Medical Corps is proposed by pending legislation. Other bills provide for the extension of medical care to the recipients of public assistance, provide that insecticides containing arsenic or fluorine must be distinctly colored, propose a broadening of the Social Security Act to include employees of religious, charitable, scientific and certain other organizations and provide postwar educational opportunities for service personnel.

The granting of military rank for members of the Navy and Army Nurse Corps is contemplated by two pending bills. Another bill proposes to amend the Pay Readjustment Act of 1942 so as to authorize service in the Medical Reserve Corps to be counted for pay purposes. A publicly supported adult education program is contemplated by legislation that is pending.

Companion bills are awaiting committee action proposing to engraft on the existing social security program a system of compulsory sickness insurance involving inevitable federal control of the practice of medicine and a diluted quality of medical care.

A pay as you go tax law has been passed by the Congress, the effect of which will be to place a majority of the federal income tax payers on a current basis.

A pending bill would confer on labor departments jurisdiction over industrial hygiene.

Bureau of Public Relations

The Bureau of Public Relations of the American Medical Association is devoted to extending to the medical profession and to the public information regarding the work of the American Medical Association and the progress of medical science. It is not primarily an organization for propaganda, designed to "sell" the medical profession to the public or to overcome unfavorable legislation. Its services, nevertheless, induce support of the point of view of the American Medical Association and of the medical profession by keeping the public fully informed regarding medical progress and medical affairs.

During 1943, more than 5,200 individual inquiries came to the Bureau of Public Relations from newspapers, magazines, radio stations and other mediums of public information. More than 84,000 individual items based on articles that appeared in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and in *HYGEIA* were published in daily newspapers. The number is estimated on the basis of press clippings received in the headquarters office. *THE AMERICAN MEDICAL ASSOCIATION NEWS*, a clip-sheet, is sent to some 1,200 newspapers, press services, magazines, radio stations, industrial house organs, medical journals and bulletins.

An analysis of the inquiries directed to the headquarters office indicate that editors, reporters, feature writers, news commentators and managers of radio stations throughout the United States look to the headquarters office of the American Medical Association as a dependable source of information regarding medical matters. The information sought has included facts and advice on every phase of the multiple activities of the Association. In hundreds of instances the response from the headquarters office has been the means of correcting inaccurate information in process of publication; in many other hundreds of cases complete elimination of inaccurate information has resulted.

The Bureau of Public Relations maintains direct contact in Chicago with the headquarters of all press associations and radio chains. One or more stories concerning material published in *THE JOURNAL* or in *HYGEIA* has been placed on the wires of press associations each week in 1943.

During 1943 the Bureau of Public Relations assisted in the public relations activities of the following organizations in the

field of medicine, through conferences of its personnel with the executives of these agencies and through the preparation of material utilized by them:

The National Foundation for Infantile Paralysis, Inc.
Baruch Committee on Physical Medicine.
Division of Public Relations of the U. S. Army Medical Department.
Division of Public Relations of the U. S. Navy Medical Department.
The American Society for the Control of Cancer.
Procurement and Assignment Service for Physicians, Dentists and Veterinarians.
Medical director of the Selective Service System.
The Division of Medical Sciences of the National Research Council.
The American Red Cross.
Medical aspects of the War Production Board, Office of Price Administration, and Rural Electrification Administration.

In addition to these contacts, which have been more or less frequent during the year, innumerable special instances have arisen in which the Bureau of Public Relations has aided the war effort by disseminating material from government agencies to both the medical profession and the public.

Attention is called to a survey made by the Opinion Research Corporation of Princeton, N. J., at the request of the National Physicians Committee, in which a cross section of public opinion was ascertained relative to the medical profession. The survey indicated that the vast majority of the American people are well satisfied with the medical care they have received from a professional point of view and felt that their physicians had a personal interest in their care. More than three fourths of the people queried had heard of the American Medical Association, and about half of these people defined its purposes with reasonable accuracy. In general, those who had heard of the American Medical Association expressed approval. The inquiry revealed that prominent mention of the American Medical Association in public education activities had a favorable influence on public thinking. Most of the people queried thought of the purposes of the Association as being to publish new medical technics, to keep the standards of medical practice high and to give endorsement to acceptable medical products. Less than one tenth of the people interviewed thought of the Association as a "union" of physicians, as a "trust" or as being otherwise primarily a self-interested body. This would seem to indicate, in general, a proper result of the public relations activities as carried on by the Bureau with relation to the attitude of the American people toward American medicine and the medical profession.

Bureau of Medical Economics

A review of the activities of the Bureau of Medical Economics for the year 1943 suggests that some of the Bureau's activities of previous years might be suitable for discussion again.

PRINCIPLES UNDERLYING PREPAID MEDICAL CARE

Medicine has advanced by almost continuous experimentation. Improvements in diagnosis and treatment, in surgery, in the use of drugs and appliances, in the administration of hospitals and in plans of payment for medical care are now, as they have been for centuries, being retested, rejected, restricted or extended according to their effect on the health of the people. There is no trace of truth in the charge that the medical profession is opposed to experimentation to determine either the value of diagnostic and therapeutic procedures or the suitability of the methods by which medical services are made available.

There should be a definite understanding of the significance of the defects in the distribution of medical care that the new proposals in the methods of payment are intended to cure. Many persons, in case of serious illness, cannot pay the full costs of the best hospital and medical care. Neither can they pay for the best food, clothing or shelter, or for the education of which they are capable and which would make them better and more productive citizens. Many of these very real problems are more economic than medical. Medical care for the indigent is a burden that should be borne by all society and not by physicians alone. No prepayment plan of arranging for medical care for the indigent by voluntary or compulsory

contributions from the beneficiaries themselves is practicable, since this group has no money with which to pay premiums.

The population group that has incomes too small to meet health necessities in the way of food, clothing, fuel and shelter cannot be expected to budget or make prepayments for catastrophic illness. These "medically indigent" are always more of an economic than of a medical problem, since their medical care, regardless of the manner by which the cost is met, must, as always, be paid for directly or indirectly out of higher incomes.

CONCLUSIONS MUST BE TENTATIVE

All the elements of the problem of distributing medical care are still so constantly changing that any conclusions must be tentative, any action experimental. A complete solution of the problem of the distribution of medical facilities and services to every one is not immediately possible. Progress must come through adjustment of individual medical needs to existing knowledge and resources. Financial resources are widely dispersed and are controlled by individuals, governments, societies and institutions. Medical resources are found almost entirely within the medical profession. Unified means of utilizing these medical resources places the duty of direction in the hands of the medical profession. The various county and state medical societies, in their effort to meet the demands placed on them by this duty, have undertaken experiments that may be helpful in an attempt to find a more complete realization of the ultimate goal of good medical care for every one.

Medical societies in different parts of the United States have repeatedly assisted in the solution of some particular health problem. The part played by state and county medical societies in the organization and operation of medical service plans is of the greatest importance. From time to time throughout the period of growth of these plans over the last ten or more years, several fundamentals have been noted and discussed in the annual reports of this Bureau. In 1935 attention was called to the fact that these experiments were so diverse that even an enumeration was considered difficult. At that time there were noted some of the undesirable features that should be avoided, if possible, in developing these plans.

TEN PRINCIPLES OF 1934 STILL SOUND

It is again urged that the medical profession continue to be alert to detect and to deal with medical service plans and other medical activities promoted by irresponsible people. Only by being constantly alert for the evidences of relaxed or unsound professional standards will it be possible to maintain high standards of service. It is suggested, therefore, that the medical profession continue to urge the application of the Ten Principles adopted in 1934.

Notwithstanding all that has been done to emphasize the value of good medical care, properly organized and administered, the public has not yet been educated to recognize the value and the cost of a complete medical and surgical service, and it has been deceived as to its cost by the propaganda for compulsory sickness insurance and many lay-administered plans. Many such plans have led their clients to believe that comprehensive service is being given through existing schemes, or could be given by proposed plans, for much less than its actual cost.

The first step should be a more adequate education of the public to the real values of a complete medical service, with greater emphasis on its actual cost. That this ideal has not been overlooked, even by medical societies that have started with a limited plan, is seen from the following statement in the Report of the Special Committee to the Massachusetts House of Delegates: "Your committee urges a gradual approach to our ultimate ideal—total medical coverage by a comprehensive policy—through well defined initial steps of partial coverage."

A desirable prepayment plan for medical care is necessarily complex. It touches closely nearly all emotions, prejudices and customs in our society. It yet lacks the experience and evolution common to most social institutions. Compulsory sickness insurance systems in every country, and throughout their entire

history, have been subject to continuous changes. In spite of their anchorage to legislation and government regulation, not one as yet shows any signs of approaching equilibrium. It is not surprising that plans of such short duration as those of medical societies in the United States are still largely experimental.

Professional supervision of all the standards of medical service must be made one of the dominant features of prepayment services, as it has always been of private practice. The protection of the subscribers, the financial security of the plans and the honor of the profession demand this.

None of the activities of modern medicine deserve more serious consideration than those which are concerned with the organization and distribution of medical services. For many years the House of Delegates of the American Medical Association encouraged state and county medical societies to experiment with prepayment methods of distributing the costs of medical care, but not until the last few years has this subject been handled with the same frankness and detail of discussion that have been used in other phases of medical practice. The difficulties which accompany the maintenance of the standards of prepaid medical care are increasingly more easily reconcilable as the objectives and potentialities of this form of medicine are clarified and perfected. The system of medical service or practice of the future must be sufficiently flexible to meet a variety of demands and at the same time maintain a high quality of medical care.

In some parts of the United States, plans for prepaid medical care did not develop as well or as rapidly as it was expected they would, and therefore it has seemed advisable to postpone further efforts in that direction until the demand for this type of medical service becomes more generally and definitely apparent.

GEOGRAPHIC SCOPE OF PREPAYMENT PLANS

The necessary legislation has been secured and administrative organizations are functioning in California, Colorado, Delaware, Massachusetts, Michigan, Missouri, New Jersey, New York (three), North Carolina (two), Oregon, Pennsylvania, Texas, Utah and Washington. Some part of the program has been undertaken, but the entire program has not yet been completed, in Connecticut, Indiana, Maine, Nebraska, New Hampshire, Ohio, Oklahoma, Tennessee, West Virginia and Wisconsin.

The California Physicians' Service, which was organized in 1939 under a general nonprofit corporation law, serves the entire state of California and in November 1943 had nearly 88,000 beneficiary members. There is a Rural Health Program conducted in cooperation with the Farm Security Administration that has small units covering some nineteen counties; War Housing Projects have about 31,000 clients. The entire service is now reported to be proceeding satisfactorily.

The Colorado Medical Service, Inc., has served metropolitan Denver since May 1, 1942. As of March 1, 1943 there were 5,000 persons covered by the Colorado Medical Service as members and 2,261 persons who were applicants to the service.

Group Hospital Service, Inc., which began operations in Delaware in 1935, sponsored a plan for medical care on Jan. 25, 1943. The area served is the state of Delaware. Contracts were not offered to the public until April 1943, and enrolment is by employed groups only. There is no deductible clause, and the plan contains no income limitation. The plan, operated through the Group Hospital Service, Inc., of Delaware, is one of the few of its kind in the United States.

The Massachusetts Medical Service was organized in July 1942 to serve the geographic area covered by the commonwealth of Massachusetts. As of December 1943 the total membership was 23,000 persons enrolled in 200 groups. It is of interest that the Massachusetts Medical Service is operated in conjunction with the Massachusetts Hospital Service.

The Michigan Medical Service was organized by the Michigan State Medical Society in 1940. The first contracts became effective on March 15, 1940. By Nov. 30, 1943 some 600,455 subscribers had been enrolled. For reasons too complicated to be explained within the space of this brief note, the early opera-

tion of the plan showed a fairly large deficit, which by the early part of 1944 had been reduced by a very substantial amount. Some joint operations, similar in some respects to joint operations in Massachusetts, were put into effect between the Michigan Medical Service and the Michigan Hospital Service.

Surgical Care, Inc., was organized late in 1942 with the approval of the Jackson County, Mo., and Wyandotte County, Kan., medical societies. On Dec. 15, 1943 the organization reported 6,500 persons covered in 200 insured groups. There is no deductible clause. Surgical Care, Inc., is coordinated with the Blue Cross Hospital Service Plan.

The Medical-Surgical Plan of New Jersey, which was organized by the Medical Society of New Jersey on March 24, 1941, was accepted in New Jersey on March 26, 1941. A certificate of authority to operate the Medical Service Administration was received from the Commissioner of Banking and Insurance. No report had then been issued on the number of beneficiaries of the plan. The Farm Security Administration began with 1,223 beneficiaries. Medical-Surgical Plan of New Jersey had some 15,000 persons enrolled as of Nov. 30, 1943.

Medical and Surgical Care, Inc., was the first prepaid medical and surgical care organization to be approved and put into operation in New York under the state insurance law. This plan went into operation in April 1940. As of March 1, 1943 the enrolment was 17,000. The area served comprises fifteen counties of central and northern New York. The original experimental plans were discontinued as of May 1942, and a new type of contract has been offered and has been in operation since October 1942.

The Western New York Medical Plan, Inc., was organized in 1939 but was not licensed to operate until February 1940. Contracts were not offered to the public until March of that year. The plan is organized under Article IX-C of the New York Insurance Law and operated on an indemnity basis in accordance with an indemnity schedule which is a part of the contract. As of Dec. 1, 1943 this plan had 22,000 members.

Medical Expense Fund of New York, Inc., on about May 4, 1940 received a permit from the State Insurance Department to solicit subscribers. The plan was incorporated in October 1939 as a medical expense indemnity corporation. As of March 1, 1943 there were 2,500 subscribers reported. The number of subscribers according to the types of contracts offered is not available. This is one of the medical service organizations that still use a deductible clause in their contracts. Enrolment is in groups or individually. It is stated that the fund offers not a plan but a framework of administration principles. In 1942 this corporation met all its obligations in full, and on Jan. 1, 1944 it had some 5,000 subscribers and almost the same number of participating physicians.

Late in 1940 a plan of medical care was suggested in the Corlears Hook section of the Lower East Side of New York City. This project, which was known as the Corlears Hook Medical Association, was established late in 1940 under the sponsorship of the Medical Society of the County of New York with funds supplied by the New York Foundation. Over the period of November 1940 and May 1942 a cumulative total of 695 families representing 2,226 persons were enrolled. Reports indicate that this organization has been terminated, worth while as the experiment seems to have been.

The Medical Service Association, Inc., Durham, N. C., which is composed of fourteen counties in that state, was organized with the approval of the Durham-Orange County Medical Society and appears to comprise the same area that it did when it was organized about the middle of 1937. On Oct. 30, 1943 the association comprised some 13,031 persons.

In North Carolina there is also the Hospital Savings Association, which has a membership of some 210,000 persons. The enrolment is limited to persons who are subscribers to the hospital savings plan. Contract benefits available to the members of the Hospital Savings Association are hospitalization for thirty days, operating room, drugs, anesthesia, routine laboratory, surgery indemnity allowance up to \$75, and maternity care after ten months. All benefits are available for a period of thirty days during each certificate year.

The Medical Service Association of Pennsylvania serves the state of Pennsylvania from an office at 230 State Street, Harrisburg. On Jan 1, 1944 there were some 8,500 subscribers. The acquisition of subscribers in the present enrolment area, western Pennsylvania, is being conducted through the enrolment facilities of the Hospital Service Association of Pittsburgh on a cooperative basis, but the Medical Service Association maintains its own identity.

In 1941 an effort was made by the State Medical Association of Texas to secure an enabling act to authorize the formation of a state prepayment plan. The state did not enact the law, but now there seems to be some doubt as to its necessity. The Dallas County Medical Plan was the first medical society plan to be organized in Texas. It was initiated experimentally on April 1, 1940. As of Dec 1, 1943 there were some 378 subscribers, all in Dallas County, Texas. The physicians are paid according to a fee schedule. The Dallas County Medical Plan has worked closely with the Group Hospital Service, Inc. The Farm Security Administration programs were conducted in 1943 in 122 counties in Texas and served 33,793 persons. Experimental medical programs are being conducted in Cass and Wheeler counties.

Utah Medical and Hospital Benefit Association. Owing to apparent inability to secure sufficient volume, it has been deemed best to urge the hospitals to organize a Blue Cross plan for the purpose of handling hospitalization on a service basis. This is now in process.

FARM SECURITY ADMINISTRATION PLANS

The Farm Security Administration has expanded until it now has borrowers among the medical care groups in all but nine states and the District of Columbia. The type of service for which money is furnished to borrower families differs considerably throughout the area over which the plans operate, and the regions are also divided into those which operate on a fee for service basis and those that have some other method of payment.

According to the latest available information the Regions and Units of the Farm Security Administration in which some arrangements have been made to provide medical care groups with some type of medical care are as follows:

Region I, 23 units in 73 counties: Maine, Maryland, New Hampshire, New Jersey, New York, Pennsylvania and Vermont.

Region II, 3 units in 3 counties: Minnesota.

Region III, 8 units in 92 counties: Illinois, Indiana, Missouri and Ohio.

Region IV, 122 units in 150 counties: Kentucky, North Carolina, Tennessee, Virginia and West Virginia.

Region V, 166 units in 179 counties: Alabama, Florida, Georgia and South Carolina.

Region VI, 145 units in 146 counties: Arkansas, Louisiana and Mississippi.

Region VII, 28 units in 81 counties: Kansas, Nebraska and South Dakota.

Region VIII, 98 units in 106 counties: Oklahoma and Texas.

Region IX, 15 units in 24 counties: Arizona, California and Utah.

Region X, 32 units in 66 counties: Colorado, Montana and Wyoming.

Region XI, 19 units in 37 counties: Idaho, Oregon and Washington.

Region XII, 30 units in 51 counties: New Mexico and Texas.

Region XIII, 1 unit in 1 county: Puerto Rico.

STUDY OF DEATHS OF PHYSICIANS

The deaths of physicians have continued at almost the same rate annually for many years. The number varies from a high of slightly more than 3,700 in 1939 to nearly 2,900 in 1931.

Last year a study was begun to determine the facts concerning the causes and rates of deaths among physicians in order that there may be shown a better comparison of the death rates in the general population with those in the medical profession. The Association will benefit in this study by the skill and experience of a well known statistician, Dr. Louis I. Dublin.

Since this seems to be the first study of the kind for the determination of mortality rates for a professional group much interest should develop in the results of the work, and, since all the figures from this work will represent an original contribution as to both methods and rates, there should be considerable

satisfaction in developing a process that should be of value to professional groups.

It is impossible to state at present the exact time when these data will be available. However, as soon as the work is completed an announcement of the details of publication and distribution of the data will be made.

WARTIME VITAL STATISTICS

It was to be expected that, as the war effort grew in size and scope, more and more of the ordinary civil processes would be affected. Among the important civil activities thus affected is the work of the vast number of persons who have been trained in the prompt and accurate recording, reporting and analysis of data pertaining to the vital processes of the nation known as vital statistics. At present it is difficult and in many instances impossible to continue the routine processes which during normal times would have been continued automatically. The wartime demands made on available manpower have made it necessary to curtail greatly or to discontinue altogether some of the previous activities in the field of statistics.

It is hoped that this curtailment will be only temporary, but, until the military victory is complete, statistics, however vital, can be postponed for other more urgent affairs. The war must be won, otherwise there will be no need for vital statistics.

THE WAR—AND AFTER

The war emergency has been so great that the medical profession has been forced to accept compromises in governmental control of education and placement of physicians remaining at home. This same emergency has compelled the armed forces to take into the medical services young men who have had barely enough time to complete the essentials of their medical education.

These young men have been subjected to regimentation imposed by the very nature of war. When they come home to enter practice, some of them may prefer to be subject to direction. To others nothing short of total freedom of enterprise will be satisfactory. Some of the straightening out postwar work is going to demand the patience of Job and the wisdom of serpents on the part of the older and more experienced members of the medical profession. The same war emergency that has brought about such pronounced governmental control of medical education and medical practice and has reduced to an almost dangerous degree the number of physicians for the civilian population has created a large group of physicians who will enter private practice with only such experience as has come to them in combat service or in military camps and hospitals. The same emergency has produced various types of medical service plans in industrial plants. Some of these may be well conceived and well operated, but there is danger that many persons, grown accustomed in times of high wages to available low cost care, will demand continuation of the low cost feature without regard to quality of service. Such demand may result in the development of commercially controlled schemes directed by incompetent or, perhaps, irresponsible individuals or groups.

That there should be some adjustment now and in the postwar days in the nature of a better understanding between the old order and what may come to be an entirely new order there seems little doubt. But there must be no compromise between the ideal of high quality of medical care for the American people and postwar pressures. It will take courage, devotion, self sacrifice and even a willingness to face condemnation to stand against the weight of such pressure. To many the struggle may seem so great that it will be easier to follow the line of least resistance. American medicine has not grown by going with the stream. It has grown by resisting every encroachment that would rob it of its freedom to develop toward its goal of individual advancement and ever higher standards of service.

The Bureau of Medical Economics has pioneered in a small way in some phases of growth of the profession. The very war emergency that has brought the dangers pointed out has interrupted the general routine of the Bureau. With the return of peace the Bureau hopes again to resume its place in the work of and for the American medical profession.

Summary

As it has done each year since 1934, when the Ten Principles were first adopted by the House of Delegates of the American Medical Association, the Bureau of Medical Economics in 1943 continued to stress the soundness of these principles and to urge the medical profession to continue to be alert to deal with medical service plans promoted by irresponsible people.

A desirable prepayment plan for medical care is necessarily complex. Compulsory sickness insurance systems in every country have been subject to continuous changes, and none have yet shown any signs of approaching equilibrium. Professional supervision of all the standards of medical service must be a dominant feature of prepayment services, as it has always been of private practice.

Necessary legislation has been secured and administrative organizations for the operation of prepayment plans are functioning in fourteen states, and some part of such programs has been undertaken in ten states.

The Farm Security Administration has continued to expand until it now has borrowers among the medical care groups in all but nine states and the District of Columbia.

A study to determine the causes and rates of deaths among physicians in order to show a comparison with death rates in the general population with those of the medical profession was begun last year. Since this seems to be the first study for the determination of mortality rates for a professional group, much interest should develop in the results of the work, which will be published as soon as the study is completed.

The war emergency that has brought definite governmental control of medical education and medical practice and has reduced to an almost dangerous degree the number of physicians serving the civilian population has created a large group of physicians who will enter private practice with only such experience as could be obtained in combat service or in military camps and hospitals and has also produced various types of medical service plans in industrial plants. There is danger that many persons, grown accustomed to low cost medical care, will demand continuation of the low cost feature without regard to quality of service, which may result in the development of commercially controlled schemes directed by incompetent or irresponsible individuals or groups.

The Bureau of Medical Economics has pioneered in some phases of the growth of the medical profession. The war emergency has interrupted the general routine of the Bureau, but it is hoped that with the return of peace the Bureau will again be able to resume its place in the work of and for the American medical profession.

Bureau of Exhibits

During the year 1943 the activities of the Bureau of Exhibits were altered in character because of the war but in no way decreased in volume. The staff of the Bureau was hard pressed to keep up with the requests which were made on it. Participation in programs of graduate medical instruction and in health education was carried on in forty-three states and the District of Columbia—in all but Maine, Oklahoma, South Dakota, Utah and Vermont. Special consideration was given to requests from the Army and the Navy.

Requests for assistance outside the limits of continental United States could not be complied with because of the war. Numerous visitors from Canada, Mexico and South American countries were supplied with information, however, concerning the various activities of the Bureau.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit in 1943 was canceled along with the other scientific activities of the annual session.

The Committee on Scientific Exhibit of the Board of Trustees initiated the program for the 1944 session in September 1943

with the appointment of three special exhibit committees, while organization of the group of representatives to the Scientific Exhibit from each section of the Scientific Assembly was completed. Much of the success of the Scientific Exhibit depends on the contributions of the special exhibit committees and the section representatives. Most of their work must be done during the fall months preceding the annual session.

The Advisory Committee was reduced during the year from seven to six members by the death of Dr. D. Chester Brown. For more than a score of years he was actively interested in the affairs of the Scientific Exhibit. During his long tenure as a Trustee, he served on the Committee on Scientific Exhibit, much of the time as chairman, and it was due to his energy that the Scientific Exhibit reached its high level of excellence. In 1934, when his term as Trustee expired, he was appointed to the Advisory Committee, where he continued to exert an active influence until failing health prevented his attendance at meetings.

ASSOCIATION EXHIBITS

The Association Exhibits, which originally depicted the activities of the various councils and bureaus of the American Medical Association, have been expanded to cover many fields of scientific medicine. The total number of exhibits available for loan at the end of the year was fifty-five, of which twenty-nine were suitable for medical and other scientific groups, and the rest for public expositions and fairs. Several of the older exhibits were discontinued and seven new ones added; others were checked and brought up to date. New material is planned for the coming year to replace exhibits that have been worn out in service.

Graduate medical instruction was carried on with exhibits at thirty-five medical meetings and other scientific gatherings. State medical societies availed themselves of the opportunity to use the exhibits of the American Medical Association at annual meetings to a larger degree than ever before. The Director of the Bureau attended many of these meetings, while other members of the headquarters staff were present at some meetings. At a few meetings no representative of the Association was present, the exhibits being cared for locally. Such activities are more time consuming than is ordinarily realized, for the exhibitor must be in attendance the day before the meeting begins and stay until it is finished. With the necessary travel, a full week is often necessary for a single meeting. Two or more subjects were requested at many of the medical meetings, resulting in eighty-five medical exhibits sent out during the year, which is more than double the number sent out during 1942.

Health education was promoted with seventy-six exhibits on sixty different occasions. This was a large increase over the previous year in spite of the fact that many of the state fairs and other large expositions in which the Association is often called on to participate were canceled. The type of health exhibit which has been developed for loan purposes is suited primarily for the exposition or fair, where some thousands of people may congregate. It does not lend itself to school room purposes and afternoon meetings of small groups. Thus the numerous requests from those organizations were of necessity rejected.

MUSEUMS

Permanent health exhibits of the American Medical Association have been maintained at the Chicago Museum of Science and Industry, the Cleveland Health Museum, the Newark Museum and the Toledo Museum of Science. At the first three museums the exhibits have been supplemented with information files about health, with copies of *HYGEIA* on display and with question boxes. The questions are sent to the Association headquarters once a week and are answered by mail through the Bureau of Health Education. Many hundreds of persons avail themselves of this service.

Temporary health exhibits have been lent during the year to the Cayuga Museum of History and Art at Auburn, N. Y., and to the Tower of Health at Madison, Wis.

The American Museum of Health in New York is still without permanent quarters, but the exhibits of the American Medical Association which are in its possession were lent to other groups during the year.

MOTION PICTURES

The motion picture library is in need of new films to keep pace with the demand and of additional copies of the films on hand. There are only twenty-five titles in the collection, three of which were added during the year. The pictures were shown four hundred and sixty-four times at two hundred and seventy-one meetings. Transportation this year has been a serious problem; more time has been required to insure delivery of the films, thus reducing the number of showings. The secretary of the Bureau has full charge of bookings, and it is due to her efficiency that the small number of films has been shown so many times. At best only a portion of the requests can be complied with, and reservations are made many weeks in advance.

A lively interchange of information has occurred during the year with other groups interested in motion pictures, and the files of the Bureau have been open to persons who wished to check their own lists. Hundreds of requests have been answered from these files about the availability of films distributed by other organizations.

The film library of the Association contains six pictures on anesthesia, seven on physical therapy, two on syphilis and the rest on miscellaneous subjects. Seven of the films are suitable for public showings.

ARMY AND NAVY COOPERATION

Special consideration is given to requests from medical officers in the service of the armed forces. Assistance has been given to Army and Navy posts in twenty states, mostly in the form of medical motion pictures for instruction purposes. Some attempts have been made by Army officers to obtain exhibits and similar material for the instruction of enlisted personnel, but this has been difficult because of the expense, the transfer of the officer in charge and other reasons. It has been possible, however, to send a few health exhibits to Army camps.

PUBLICATIONS

During the year the fifth edition of the Primer on Fractures, prepared by the Special Exhibit Committee on Fractures, was published. The demand is still heavy for this valuable little book.

Fundamentals of Anesthesia, prepared by the Special Exhibit Committee on Anesthesia, was reprinted and the supply exhausted; new material has been added for the second edition, which was in press at the end of the year.

Two pamphlets, prepared in connection with exhibits at annual sessions, are still popular—Varicose Veins and Food Charts. Many copies have been distributed.

Summary

The Scientific Exhibit was canceled in 1943 along with other scientific activities of the annual session. A good start was made on the Scientific Exhibit for the 1944 session.

Other activities of the Bureau were doubled, with participation in graduate medical instruction and health education in forty-three states and the District of Columbia. Eighty-five exhibit units were presented at thirty-five medical meetings and other scientific gatherings. State medical societies availed themselves of this service in greater numbers than ever. Seventy-six health exhibits were sent out to sixty fairs and expositions. Cooperation was maintained with seven museums, at four of which permanent exhibits from the Association have been established.

Motion pictures continued in greater demand than ever. There are twenty-five titles in the motion picture library, which were sent out four hundred and sixty-four times to two hundred and seventy-one meetings. Special consideration was given to requests from the Army and Navy, with assistance given to posts in twenty states.

The publications prepared in connection with the work of the Bureau continued in good demand. The fifth edition of the Primer on Fractures was published, while the second edition of Fundamentals of Anesthesia was in press at the end of the year.

The Bureau of Investigation

Dr. Paul C. Barton, Director of the Bureau of Investigation, was engaged in the service of the Procurement and Assignment Service throughout the year covered by this report. Meantime the Bureau continued its part in the educational activities of the American Medical Association. The Bureau collects and dispenses information concerning "patent medicines," quacks, frauds, fakes, fads and faddists to physicians, laymen, government agencies, federal, state and municipal authorities, Better Business Bureaus, business corporations, newspapers and magazines, radio stations, civic and welfare organizations, educators and students.

INQUIRIES

Inquiries from these sources continued actively during 1943. The fact that potent ingredients of nostrums must now be declared on the labels, under the provisions of the Food, Drug and Cosmetic Act of 1938, necessarily has reduced somewhat such letters about these products as would come from persons or organizations interested more in contents or formulas than in their effects on the user, but grammar school, high school and college students continue in large numbers to inquire about the composition of "patent medicines" and their potential harmfulness. This is partly the result of contemporary interest in, and study of, consumer problems.

Questions about quackery and nostrums have also come increasingly from members of Red Cross home-nursing classes. Inquiries continue to come from physicians in the armed services, even including some who are overseas, as well as from the enlisted men under their care.

Newspapers and magazines having medical advertisements offered them have continued to inquire as to the standing of these subjects, and the Better Business Bureaus have continually called for assistance in their investigations of medical schemes, as have also the various federal agencies.

Many inquiries, and particularly those from students, dealt with more than one item, and some of them included long lists, as indicated by the fact that 3,000 inquiries represented 4,500 subjects. Approximately 33 per cent of all inquiries pertained to the same products. One item, which was in fifteenth place on the list in 1942, was in third place in 1943. Another, about which there were no inquiries in 1942, was in fifth place.

THE JOURNAL

During 1943 the Bureau contributed a total of twenty-eight articles to THE JOURNAL. These included sixteen presentations of abstracts of one hundred and seventy-one Notices of Judgment issued by the Food and Drug Administration, one abstract of nine Cease and Desist Orders and four abstracts of forty-three stipulations under the Federal Trade Commission; also there were six articles containing abstracts of twenty-one fraud orders issued by the United States Post Office Department.

PUBLICATIONS

During the year five hundred pamphlets issued by the Bureau were distributed, in addition to one hundred and one copies of the book Nostrums and Quackery and Pseudo-Medicine.

OTHER SERVICES

Physicians and educators used the Bureau's lantern slides and film strip on the nostrum evil and quackery in eight instances during the year. These cases included two presentations under the supervision of the American Red Cross.

Considerable discussion time, data and other assistances were given by the Bureau in 1943 to the Post Office Department, the Federal Bureau of Investigation, the Food and Drug Administration and the Federal Trade Commission. Some of the results of this cooperation are evident in the abstracts which the Bureau prepared for THE JOURNAL of actions taken by these agencies against various forms of quackery.

Summary

During the past year the Bureau has continued its efforts to maintain the work which was instituted in 1906 by supplying information obtained from all possible sources in regard to subjects which come within its province, to the profession and the public, by correspondence and other means.

The Bureau has contributed frequently to the pages of *The Journal* and has circulated its publications and lantern slides and film strip in many directions.

The Bureau's cooperation with leading government agencies which take action against medical fads and frauds has been maintained.

Committee on Wartime Graduate Medical Meetings

The central Committee of the Wartime Graduate Medical Meetings respectfully submits the following report:

This nationwide movement in graduate medical education was initiated by the American Medical Association, the American College of Physicians and the American College of Surgeons, and is authorized by the Surgeons General of the U. S. Army, the U. S. Navy and the U. S. Public Health Service. The central Committee on Wartime Graduate Medical Meetings is composed of Dr. Edward L. Bortz of Philadelphia, chairman, representing the American Medical Association; Dr. William B. Breed of Boston representing the American College of Physicians, and Dr. Alfred Blalock of Baltimore representing the American College of Surgeons. The teaching personnel and facilities of American medicine have been mobilized for the purpose of offering advanced instruction to the medical officers of the armed forces and to civilian doctors.

For working purposes the country is divided into twenty-four regions, each region with a committee of three physicians representing the three sponsoring organizations. On request from the commanding officer of a service hospital, the regional committee plans courses of instruction in the form of teaching ward rounds, clinicopathologic conferences, practical demonstrations, study groups, moving pictures and formal lectures.

Well known authorities have been appointed as national consultants for thirty-one different specialties, and each consultant has organized a national faculty for his particular field. Thus far these faculties include 1,650 teachers who are available for participation in these programs throughout the nation.

The Wartime Graduate Medical Meetings have the unqualified support of the deans and faculties of fifty-two of the nation's leading medical schools.

The statistics available in the central office up to this date are as follows:

Number of individual meetings, 77 (these are separately planned meetings ranging from a short lecture and discussion period to a six day course with a number of authorities in various specialties participating).

Number of continuation courses, 84 (these are courses of instruction in the various specialties which are scheduled to take place at the same installation at regular intervals).

Total number of Wartime Graduate Medical Meetings, 161.

Total number of daily sessions, 637.

Number of installations where meetings have taken place: Army, 107; Navy, 20; civilian hospitals, 13.

Number of states in which meetings have taken place, 40.

Lectures in Canada, 3 (at present there is another meeting scheduled for Canada at which the Wartime Graduate Medical Meetings will participate).

Approximate number of physicians who have attended these meetings, 15,000.

Number of physicians now serving on the national faculties, 1,650.

Circulation of Monthly Bulletin, 2,200.

Respectfully submitted.

EDWARD L. BORTZ, Chairman.

Committee to Study Air Conditioning

The Committee to Study Air Conditioning, in spite of difficulties created by the war, has attempted to carry on its work, has conducted some studies and has produced a limited number of papers for publication.

Military requirements for the use of dichlorodifluoromethane, long used as an essentially nontoxic coolant in air conditioning and refrigeration, led to an increased use of methyl chloride, a refrigerant of known dangerous properties. The reason for the substitution of methyl chloride is that the mechanical devices

formerly used for the Freon gases (dichlorodifluoromethane) are such that no other refrigerant than methyl chloride might be used without extensive and probably impossible mechanical alteration. Knowing past disastrous experiences with methyl chloride, this committee investigated the situation and in *THE JOURNAL* published an appraisal of the matter, warning against the dangers involved in any improper use of methyl chloride. Although this report may have been of some value, there are newspaper reports of some fatalities and more nonfatal accidents following inhalation of methyl chloride vapors from leaks in cooling systems.

This committee long has accepted air conditioning as one preventive measure in connection with noise abatement. In this account an investigation was carried out which led to publication in *THE JOURNAL*, Oct. 23, 1943, of an article entitled "The Abatement of Noise." In this investigation the committee was aided by Mr. John D. Goodell of the Signal Corps of the United States Army.

Without sharing the actual work of one of its committee members, the committee has sponsored one publication by Dr. Alvan L. Barach dealing with a new method of tuberculosis therapy based on the principle of modified air pressures leading to the complete nonbreathing of the patients for prolonged, predetermined periods. This report is entirely the work of one committee member and not of the committee.

In the belief that medical students as trained in most medical colleges are inadequately instructed in the essentials of air conditioning and with particular reference to health, this committee in cooperation with the Association of American Medical Colleges is in process of compiling adequate instruction material which will be placed at the disposal of all medical colleges for whatever use these several colleges may elect.

At one of its meetings the committee reviewed the matter of the use of aerosols for the purposes of air sanitation. Without condemning this growing practice, the committee, up to the present time, does not accept as valid all of the claims that have been made in promoting the values of aerosols. The position of the committee is that aerosols have limited values but not extraordinary values.

In its meetings and in its correspondence the members of the committee have maintained a continuous appraisal of developments in air conditioning in relation to health, but many of these items of discussion do not warrant mention in an annual report. As in the past, the committee will continue to prepare and promulgate brief reports for the medical profession in relation to the air conditioning situation such as may appear to be helpful.

Respectfully submitted.

CAREY P. McCORD, Chairman.

ALVAN L. BARACH.

WALTER M. SIMPSON.

C. P. YAGLOU.

Committee to Study Problems of Motor Vehicle Accidents

There is always the danger in such historic days as these that many of our immediate problems are more or less placed in eclipse by spectacular events in the various theaters of war and on the domestic scene. We run the risk of losing a proper perspective of the whole. We are inclined to underestimate the consequence and usefulness of our own appointed tasks in the whole machinery of our social, industrial and economic life. Traffic problems, for example, pale before the horrible death march of Bataan, the artillery and aerial bombardment of Cassino and the maneuvers of a crucial political campaign. Yet, viewed in its proper relation to the whole sweep of current events, the actual job of conserving human life and precious vehicles and of lowering economic costs has never been of more vital importance. We cannot today countenance for one moment a relaxation of combined or single efforts to reduce traffic accidents.

In 1943 traffic fatalities totaled 23,300, which represents a decline of 18 per cent compared with the previous year and 42 per cent with the 1941 figure of 39,969. Actually, the reduc-

tion in deaths was due primarily to the reduction in miles of travel. The death rate on a mileage basis was really greater in 1943 than in 1942. Furthermore, September of 1943 marked the beginning of an upward trend which has continued. Surely this gives cause for careful reflection.

POSTWAR PROBLEMS

It is reasonable to presume that when wartime bans are lifted and vehicles deteriorated by age again swarm the highways and drivers, either rusty from lack of driving or trained to army standards of operation, once more are extended prewar driving privileges, we may expect what has already been termed the "worst traffic headache" the nation has ever experienced. Estimates by conservative elements set the 1950 traffic death toll at 50,000.

There is little reason to believe that during the postwar period the public will tolerate a high accident toll. Surely we shall not be able to afford it either socially or economically. Because leading accident prevention agencies are cognizant of these facts, plans are now under way to prepare for known problems and to anticipate as far as possible the unknown.

Our street and highway system has long been labeled inadequate by informed engineers. A vast network of highways calls for construction or reconstruction. A forward step in this direction has already been taken with the recent debut of the report of the National Interregional Highway Committee. This report has been termed by Mr. Sidney J. Williams, general manager of the National Safety Council, as "the greatest single contribution ever made to highway safety." Mr. Williams says "The MacDonald standards are based on safe travel at speeds of 50 to 75 miles an hour depending on terrain. I hope this will once for all lay the ghost of 'hundred mile an hour highways.' We can build—at a price—hundred mile an hour highways and hundred mile an hour cars, but where are we going to find hundred mile an hour drivers?" This committee feels sure that fellow members of this Association will agree with this statement. Yet we must expect higher speeds with the war's end. When present limits are lifted, speeds will probably rise sharply. Already the average speeds on rural highways are increasing. And here once again the finger of guilt is leveled at the driver. Here is the controlling factor—the limiting factor.

In a notable article published some years ago Dr. Stookey, the author, stated: "The most difficult problem in the campaign for safety is neither the road nor the car. It is the human element. Roads can be rebuilt; new principles of car design can be adopted, but the driver's nervous system cannot be made over. . . . His reactions within certain limits are fixed. Yet, he too must be controlled."

Motorist limitations, speeds and highways are not the only problems which loom on the postwar horizon. The condition of vehicles, for example, is expected to be a serious one. It seems to be conceded generally by the automotive industry that new cars will not roll off assembly lines with the signing of the peace. It will take time for the industry to reconvert. With the current stockpile of replacement parts already dangerously low and with many tires worn perilously thin, it seems reasonable to assume that the condition of the vast majority of cars will pose a definite safety problem.

Then too the removal of the "conservation incentive" may tend to produce outbursts of careless and even reckless driving. The greater number of motorists have complied with gasoline and tire rationing because of the patriotic appeals for conservation. Discard these appeals and you have a natural urge to drive "prewar style"—a style which claimed almost 40,000 deaths in a single year (1941).

Drinking and driving unfailingly constitute a problem. But it is not presumptive to predict that the present scarcity of liquor may result in a current shrinkage of the actual number of these cases. During 1942 the proportion of drivers and pedestrians reported to have been drinking increased over the previous year. A driver or pedestrian who had been drinking was reported involved in one out of every five accidents. Summaries showed that 11 per cent of the drivers involved in fatal accidents had been drinking; and one out of every six adult pedestrians. Figures for 1943 are not at present available.

The committee has included within its report this very brief mention of present and anticipated postwar traffic problems in the hope of acquainting members of this Association with the current thinking of organizations in the field of traffic safety. It is now pertinent that we append their thoughts with regard to the medical man's part in this particular social and economic problem.

"There is at present—and more so than at any other time in the history of traffic safety—a great need for the viewpoint and advice of the medical man. If we are to preserve, for example, the gains we have made in the field of driver licensing; to supplement and increase as we go along and at the same time refrain from imposing restrictions of a harsh and unfair nature upon the physically and emotionally impaired men returned from service, it is imperative that we work closely with and lean heavily upon the medical profession in cases of this nature" (Dr. Donald S. Berry, director, Traffic and Transportation Division, National Safety Council).

THE PHYSICIAN AND DRIVER LICENSING

There are standards for the examination of motor vehicle operators which produce satisfactory results, but only if effectively administered by trained and capable personnel. These standards give consideration to physical defects such as impaired limbs, poor vision and deafness and offer methods of limited operation based on conditions. In the past years, however, administration of driver examinations in the majority of the states has been on a hit or miss basis, and only in isolated instances were physicians consulted regarding an applicant's physical or mental condition.

Today the need for medical consultation and cooperation is almost essential. The physically unfit, the psychoneurotics released from the service, have been given a top place in most postwar programs. Actually they represent a problem already with us. Large numbers of these men are returning monthly to resume their places in the society they left to fight for and preserve. As medical men we know that the prolonged strain of nerves imposed by war will bring certain repercussions to even those released as "fit." But the actual cases of the physically maimed and the emotionally unstable—what of these? Can we not expect to face new problems and difficult ones, particularly in such fields as driver examination?

The medical man's interest in this problem may take two paths: (1) the normal interest of a normal citizen in good government and (2) cooperative action. Point 2 would embrace the following.

- (a) Cooperate with motor vehicle authorities and examiners.
- (b) Lend assistance in initiating driver licensing standards in states where heretofore none have existed or authorities have failed to administer them properly.
- (c) Lend support to maintaining standards already established in those few states where thorough examinations are given.
- (d) Warn patients whom you consider physically or mentally unfit to drive a car of the danger to themselves and to others because of their driving.
- (e) Make every effort to execute promptly those forms which your patients bring to you at the request of motor vehicle authorities.

There exists the very great danger that public sentiment toward licensing activities may be influenced by a strong sense of sympathy toward those who have become physically or mentally impaired through no fault of their own. Public opinion in this direction could most certainly establish a trend toward lowered licensing standards, which in turn could result in a great increase in traffic deaths.

There is no disagreement concerning the considerations which should be extended to returning service men, particularly those who have suffered serious physical or mental injuries. But to allow the latter group to operate automobiles as they did in the past, and some may even drive busses or taxicabs, is endangering not only their lives but the lives of others every time they get behind the wheel.

Because of these anticipated "human failures," mental or physical, known or unsuspected, the medical profession has here not only an opportunity but a real call to perform a very genuine service in the interests of safer driving and the ultimate saving of lives. It is a call which should not go unheeded.

THE PHYSICIAN AND CHEMICAL TESTS FOR INTOXICATION

As stated in previous reports of this committee, the physician can aid enforcement officers in the control of drinking drivers by examining such drivers suspected of being under the influence and seeing that these cases are prosecuted in a scientific manner rather than relying on hit or miss lay opinion. The committee again renews its recommendation that any physician who is called on to testify in such cases fully acquaint himself with the work done by the National Safety Council in this regard, and that he secure from the council copies of reports describing standard procedures for making examinations and for avoiding legal pitfalls in taking specimens, making the chemical analyses and presenting testimony in court.

The committee, of course, reiterates its previous statement that the percentage of alcohol in the blood is a reliable index of the degree of intoxication, especially when considered along with external symptoms of intoxication. There is listed in brief form the chemical standards for the legal interpretation of "under the influence of alcohol" in terms of the percentage of alcohol in the blood or its equivalent in other body materials:

1. Below 0.05 per cent alcohol in the blood: no influence by alcohol within the meaning of the law;

2. Between 0.05 and 0.15 per cent, a liberal, wide zone: alcoholic influence usually is present, but courts of law are advised to consider the behavior of the individual and circumstances leading to the arrest in making their decision;

3. 0.15 per cent: definite evidence of "under the influence," since every individual with this concentration would have lost to a measurable extent some of that clearness of intellect and control of himself that he would normally possess.

These standards have proved themselves to be fair and practical. The zone below 0.05 per cent vindicates the non-drinking or temperate driver, the wide middle zone considers tolerance and idiosyncrasy, and the highest zone indicates alcoholic influence regardless of unusual tolerance. The chemical tests can be performed with remarkable accuracy and are the best means of proving alcoholic influence. It is necessary, however, that care be used in making the tests and that those who run the analyses have sufficient experience and are able to show that they can perform the tests accurately.

Since the last report of this committee, it is interesting to note that many cities have adopted chemical tests for intoxication.

THE PHYSICIAN AND FIRST AID

The committee renews the recommendations made in previous reports that every physician carry in his car at all times a first aid kit so equipped that he may handle efficiently the immediate treatment which may be needed in traffic accidents.

THE PHYSICIAN AND HIS DRIVING

Owing to the increasingly heavy burdens placed on members of the medical profession in the past two years, it is only wise to mention again the driving habits of the physician himself. Fatigue contributes heavily to traffic accidents. Because of the great inroads the armed services have made into the medical profession, the practices of most physicians today have doubled and tripled. Fatigue under these circumstances is inescapable. The medical man should, however, make compensation for this fact in his driving. Every rule of caution should be observed.

There is always the criticism that physicians sometimes take advantage of their driving privileges, and it is a privilege as distinguished from a right. Let it suffice to say that it is a privilege which should never be abused.

THE PHYSICIAN AND HIS ADVICE TO PATIENTS

It has often been suggested by traffic safety authorities and others that when a physician in the course of his practice treats a patient whom he knows to be unfit physically to drive a car, he should warn the patient of the danger to himself and to others because of his driving. This does not represent an unreasonable request.

As physicians we know or should know from our training that certain persons with permanent or temporary deficiencies should not drive a car. Under permanent deficiencies, for example, one might list a patient with coronary thrombosis or myasthenia gravis. Under temporary deficiencies there would

be those who take drugs; those who have serious nervous disorders, the diabetic who suffer from insulin reaction, and others who have not recovered from anesthetics or medical treatment. All of these individuals should be warned of the dangers present for them and others if they drive. There are other examples, of course, too numerous to mention. But in each case the physician is the sole person professionally qualified to judge whether or not the patient's condition will interfere with his driving ability.

Certainly here is an opportunity for the medical profession to render a great service, a service not only to the patient but to all who use the streets and highways.

CONCLUSION

In conclusion, the committee would like to report to the members of the American Medical Association the very prevalent attitude which exists today among the various organizations in the field of safety. We learned that safety men found it extremely encouraging to discover such continuing interest on our part in the traffic accident problem and were certain that our association would be able to make increasingly valuable contributions to the cause of safer driving.

In its course of research and study, the committee was often reminded of one of our heroic predecessors—a man who whipped a disastrous epidemic of cholera in the London of 1854 by the simple expedient of removing the handle from a community pump, the contaminated water of which was the source of the plague. The committee is aware that there is no single "pump handle" which can be removed to whip the traffic accident plague. We must approach the accident epidemic on at least a dozen fronts. There are many "pump handles" to be removed.

However, we of this committee are convinced that at least one of them needs the medical touch. We are equally confident that members of this association will find our particular "pump handle" and provide the initiative necessary to remove it.

Respectfully submitted.

HERMAN A. HEISE, Chairman.

Conference with Board of Trustees of American Hospital Association

The Board of Trustees in its report submitted to the House of Delegates in 1943 referred to conferences held at the Association's offices which were participated in by official representatives of the American Hospital Association, the Catholic Hospital Association and the Protestant Hospital Association. The House of Delegates directed the Board of Trustees to maintain such official contacts with the national hospital associations and adopted the report of the Reference Committee on Reports of Board of Trustees and Secretary which recommended that "the House of Delegates of the American Medical Association urge the American Hospital Association to withhold approval of the uniform comprehensive Blue Cross contract proposed by the Hospital Service Plan Commission of the American Hospital Association which includes certain medical services as a part of hospital care and which, if adopted as recommended by the said commission, would virtually compel the addition of medical services to the benefits of those Blue Cross plans and now accede to the demands of the American Medical Association by confining their benefits to hospital services."

In February 1944 the Board of Trustees participated in a conference with the board of trustees of the American Hospital Association at the offices of the hospital association in Chicago at the invitation of the board of trustees of that organization. At this conference the supplementary report submitted to the House of Delegates in 1943 and the report of the Reference Committee on Reports of Board of Trustees and Secretary as adopted by the House of Delegates were the subjects of prolonged discussion. The outcome of this conference was that committees were appointed to represent the board of trustees of the American Hospital Association and one to represent the Board of Trustees of the American Medical Association. These committees were instructed to undertake to prepare a

statement of principles which might be submitted to the policy making bodies of the two organizations

At the time this report is being prepared no meeting of the aforementioned committees has been held, but such a meeting is scheduled for a date in the early part of May, and any statement that may be prepared as a result of the meeting of the committees will be submitted to the House of Delegates in ready for such submission

Legislative Recognition of Cultists

Resolutions submitted to the House of Delegates at the 1943 meeting by Dr J. F. Hassig, delegate of the Kansas Medical Society, were referred to the Reference Committee on Medical Education, and a recommendation of that committee that these resolutions be referred to the Board of Trustees was adopted by the House. These resolutions provided 'that the proper department of the American Medical Association be suitably expanded to acquire the material and develop suitable means to combat' the legislative recognition of cultists for participation in the practice of medicine and surgery

The Board of Trustees referred the resolutions to the Council on Medical Education and Hospitals, which has for years undertaken to compile available information pertaining to matters that are directly or indirectly referred to in the resolutions. The Council reported to the Board of Trustees that its members believe that only graduates of approved schools of medicine should be licensed in the practice of medicine, but that it is beyond the function and scope of the Council to attempt to direct action to combat this evil of legislative recognition of cultists to participate in the practice of medicine. This report of the Council is in accord with the report submitted to the House of Delegates by the Reference Committee on Medical Education. The Board of Trustees approved the report of the Council on Medical Education and Hospitals

Not only has the Council on Medical Education and Hospitals attempted to compile and publish dependable information concerning the theories and educational standards of various cults but other official agencies of the Association also have concerned themselves with these matters. It should be remembered that each individual state enacts its own laws with respect to licensure, and that in spite of the earnest efforts of the medical profession to maintain the highest possible standards of medical practice and licensure a very considerable number of states have enacted legislation whereby certain cult practitioners may be licensed to practice "medicine and surgery". It seems to be the official attitude of the Congress of the United States that that body cannot go behind the provisions of laws enacted by the sovereign states with respect to who is to be permitted to engage in the practice of medicine

Up to this time no official representative of the American Medical Association has been permitted to inspect schools for the training of cult practitioners or hospitals in which such practitioners are admitted to serve, with the exception of one instance when the Secretary of the Council on Medical Education and Hospitals was included as a member of a group that was permitted to make a thorough inspection of one osteopathic school

The American Medical Association has made an earnest effort to prevent the enactment of legislation whereby cultists would be recognized by the federal government on the same basis that recognition is accorded to qualified doctors of medicine. In those instances in which the efforts of the Association in this direction have been unsuccessful, it appears that such recognition as has been given to cult practitioners through official actions of the Congress has been based on the attitude of a majority of the members of Congress voting on such issues that Congress cannot override the laws of the individual sovereign states pertaining to medical licensure

In recent years the cultists seeking recognition at the hands of Congress apparently have relied more on the possibility of including riders in appropriation bills than on actual enabling legislation

Resolution Pertaining to a Statement of the Achievements of the Medical Profession with Special Reference to Blindness and Deafness

A resolution submitted to the House of Delegates by Dr Burt R. Shurly, delegate of the Section on Laryngology, Otolaryngology and Rhinology, at the 1943 meeting of the House of Delegates has received official attention from the Board of Trustees

The Board desires to report to the House of Delegates that progress is being made toward carrying out the provisions of this resolution. The Director of the Bureau of Exhibits has compiled information concerning available motion pictures pertaining to the prevention of deafness and blindness. Articles have been and will be prepared for publication in *HYGIEA* pertaining to the achievements of medicine

Through the Joint Committee on Health Problems in Education of the American Medical Association and the National Education Association constant and effective effort has been exerted to bring to the attention of educators throughout the country the nature of health problems in the solution of which teachers and school administrators can aid and the nature of methods that can be applied in schools for the prevention of disease and for securing proper treatment of existing disease

For many years members of the official and administrative staffs of the Association have appeared before public audiences, student bodies in schools and colleges and members of various organized groups for the purpose of providing such audiences with dependable information concerning the control of communicable diseases and the application of preventive and curative measures. A considerable amount of printed material in the form of leaflets, pamphlets and brochures, in which the achievements of scientific medicine have been recorded and in which the methods of prevention of disease and its treatment have been set forth, has been distributed

These educational efforts by the Association will be continued and expanded as opportunity offers

Communication from Members of Committee on Conservation of Vision

The following communication, signed by Dr Edward C. Ellett, Chairman, Dr Harry Gradle and Dr Lawrence T. Post, members of the Committee on Conservation of Vision, was submitted to the Board of Trustees at a meeting of that body

Report of a part of the Committee on Conservation of Vision appointed by the Board of Trustees of the American Medical Association

It is the opinion of the undersigned members of your committee that the problem of the visual care of the people depends on the combined efforts of many elements and that until free intercourse is established among the representatives of these elements, your committee cannot function successfully

Since this would involve the formation of a central committee including representatives from such groups as manufacturers of optical goods, opticians, the National Society for the Prevention of Blindness, the Guild of Prescription Opticians, the American Optometric Association and many others, your committee requests authorization in writing to participate in the formation of such a central committee and to carry on such activities as that committee considers within its province be granted to your committee

Believing that the above is essential to the successful accomplishment of the purpose of this committee we respectfully request that unless such permission can be granted the committee be discontinued

This communication is respectfully submitted to the House of Delegates for official consideration

Conference with Board of Trustees of American Optometric Association

A communication addressed to the Board of Trustees of the American Medical Association by the president and the board of trustees of the American Optometric Association requested that arrangements be made for a conference at which proposals submitted by the American Optometric Association might be considered. Such a conference was held at the offices of the American Medical Association on Nov. 17, 1943, in which the members of the Executive Committee of the Board of Trustees of the American Medical Association and members of the board or trustees of the American Optometric Association participated

The following statement submitted by the board of trustees of the American Optometric Association through its president, Ewing Adams, O.D., was given very thorough consideration:

Gentlemen:

WHEREAS, According to reasonable estimates, there are in the United States at least thirty to forty million people who need assistance in the correction of faulty vision, either at distant or near points, and other optical aids to the visual functions so that distinct, comfortable and efficient binocular single vision may be maintained; and

WHEREAS, Various surveys show that in the United States there are not enough optometrists, ophthalmologists or specially trained physicians to undertake suitable refraction and examination of the eyes in order to provide properly prescribed lenses and other optical or orthoptic assistance to such persons; and

WHEREAS, There are in the United States in normal times about 7,500 to 8,000 oculists and ophthalmologists and 17,000 optometrists, thereby providing the public with only one practitioner of some type or other who is interested in the care of the eyes and the eyesight of the people to each 6,500 citizens; and

WHEREAS, The foregoing data show that there is great need for visual care and too few practitioners adequately trained and qualified to take care of the visual needs of the people; and

WHEREAS, There are in each of the forty-eight states and in the District of Columbia laws defining and regulating the practice of optometry; and

WHEREAS, There exists in the United States a number of schools of optometry (some as an integral part of recognized universities and others affiliated with such institutions or admitting only those having a specified minimum of collegiate training) which give courses that meet the minimal standard four year curriculum of the Council on Education and Professional Guidance of the American Optometric Association; and

WHEREAS, The present needs of the various armed forces and services of our country and the expanded, speeded up and more exacting conditions of industry and the vast civilian army of workers at home demand the services of trained optometric refractionists and medical eye specialists in greater degree than heretofore, and that this demand will not be abated subsequent to the cessation of war; and

WHEREAS, It is apparent to many of the leaders in medicine and optometry as well as other groups concerned with the care of the human body that there should be a closer relationship and professional affiliation between these various professional groups in order that there may be established and maintained adequate education, laws, ethical standards and mutually cooperative and supportive measures to the end that the American public may be served properly in matters of health and bodily welfare and in particular as between the professions of medicine and optometry to the end that the eyes and the eyesight of the people of this country may be taken care of in a manner commensurate with the superior services which would be possible under such cooperative action; therefore,

It is an honor and a privilege as well as the great pleasure of the trustees of the American Optometric Association to transmit this communication to the trustees of the American Medical Association, asking that, in the light of the facts and statements made in the preamble, the Board of Trustees of the American Medical Association favorably consider a conference or conferences of its members or such other councils and representatives of the American Medical Association as may seem desirable to them with the trustees or representatives of the Council on Education and Professional Guidance and the Committee on Interprofessional Relations of the American Optometric Association or any groups of them in order to consider and discuss:

1. Optometric education in relation to medical education: proper standards of training for optometrists in the field of vision and of optical technicians in mechanical procedures; proper relationships of practicing optometrists to practitioners of medicine; professional degrees, and such other matters as may be considered germane to the development of suitable standards of education from both medical and optometric viewpoints.

2. Legal and legislative matters: mutual consideration of and cooperation in adequacy and uniformity of legislation and licensure.

3. Ethics: the relationships between the practices of medicine and of optometry with a view to defining suitable relationships in the field of ethical practice between the ethical practitioner of optometry and the ethical practitioner of medicine.

4. Mutual professional respect and support: the broadening of the basis of contact and scope to the end that all practitioners who are concerned with matters of eyes and eyesight and the problems of vision from any corrective or alleviative standpoint may be included in and of necessity become integral parts of such a cooperative association of mutually interested and allied professions and health services.

The representatives of the American Optometric Association were informed that their statement submitted to the Board of Trustees would be brought officially to the attention of the House of Delegates.

Office of the Liaison Officer, Surgeon General of the U. S. Army, and the American Medical Association

Soon after the Association undertook at the request of the Surgeon General of the United States Army to make a comprehensive survey of medical personnel in the United States, the Surgeon General appointed a Liaison Officer, who was assigned to duty in the offices of the American Medical Association. Col. Charles G. Hutter of the Medical Corps of the United States Army was first assigned to this duty. After the declaration of war Colonel Hutter was transferred to active duty in another capacity, and Lieut. Col. Harold C. Lueth became Liaison Officer. The Board of Trustees wishes to make special acknowledgment of the service rendered by

Colonel Lueth, which has made available for all proper purposes information in the Association's files that can be used in furthering the active cooperation of the Association with the official agencies of the federal government that are concerned with the prosecution of the war. The Board of Trustees also wishes to acknowledge with gratitude valuable aid extended by Lieutenant Colonel Lueth that has been very helpful in the solution of various problems of concern to the Association in its desire to do everything possible to contribute to the successful prosecution of the war.

CONSULTANT OFFICE OF THE PROCUREMENT AND ASSIGNMENT SERVICE

As has been reported to the House of Delegates on a previous occasion, a consultant office of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians was established in the offices of the American Medical Association in October 1941. Since his assignment as Liaison Officer, Lieutenant Colonel Lueth has been exceedingly helpful in the direction of some phases of the work of this consultant office. A former member of the Bureau of Medical Economics who was eligible for military service received an appointment by the Directing Board of the Procurement and Assignment Service and was assigned to duty in the consultant office.

Through this suboffice of the Procurement and Assignment Service and through the efficient aid of Lieutenant Colonel Lueth, Liaison Officer representing the Office of the Surgeon General of the United States Army, various and valuable compilations of material secured through the survey of medical personnel have been prepared, which not only have been useful for present purposes but also should continue to be useful in various ways for years to come.

Conclusion

All matters that have been referred to the Board of Trustees have received official consideration. The Board of Trustees at this time can report progress only in dealing with some of these matters but will continue to give them official attention until such time as final results can be submitted to the House of Delegates.

The members of the Board of Trustees desire to offer an expression of their appreciation for helpful suggestions that have been received from various sources and for the aid that has been extended to them by members of this House of Delegates and that has come from many other sources. The Board would also commend the members of the various Councils and official committees for their devoted service and express its grateful appreciation of the faithful and efficient service of those of the employees of the Association whose duties in many instances have been faithfully performed in spite of serious difficulties growing out of the war emergency.

Respectfully submitted,

ROGER I. LEE, Chairman.
ERNEST E. IRONS, Secretary.
E. L. HENDERSON.
RALPH A. FENTON.
JAMES R. BLOSS.
CHARLES W. ROBERTS.
EDWARD M. PALLETTE.
R. L. SENSFICH.
WILLIAM F. BRAASCH.

ADDENDA TO REPORT OF BOARD OF TRUSTEES

Report of the Committee on Scientific Research for 1943

Only nineteen applications were received in 1943. Fourteen new grants were made, in all \$6,846.57. During the year twenty-eight grants were closed. In six of these grants, the work did not result in any publications, mainly on account of the war. The work under twenty-nine grants prior to 1943 is in progress but in many cases delayed or temporarily suspended by the war. During the year unused balances of grants were refunded in the amount of \$1,672.87.

From an anonymous donor \$500 was received to be credited to the Charles A Brant Fund (see report of committee for 1926, THE JOURNAL, April 9, 1927, p 1165)

FINANCIAL STATEMENT FOR 1943

Balance, Jan 1, 1943	\$ 9 791 98
Appropriation for 1943	13,700 00
Donation to Brant Fund	500 00
Refund, grant 541	67 34
Refund, grant 553	241 90
Refund, grant 582	160 48
Refund, grant 636	422 34
Refund, grant 637	619 65
Refund, grant 638	36 89
Refund, grant 652	124 27
	\$25,664 85

GRANTS AND EXPENSES PAID IN 1943

Grant 654, Reginald Fitz	\$ 100 00
Grant 655, Arthur M Lassek	300 00
Grant 656, Warren O Nelson	300 00
Grant 657, Frederick M Allen	500 00
Grant 658, Meyer M Harris	250 00
Grant 659, Deborah V Dauber (Cardiac Fund)	446 57
Grant 660, Wesley W Spink	250 00
Grant 661, Roland K Meyer	500 00
Grant 662, Katharine M Howell	750 00
Grant 663, L R Cerecedo	600 00
Grant 664, S A Thompson	550 00
Grant 665, Paul Thomas Young	300 00
Grant 666, Ulrich Friedemann	1,500 00
Grant 667, I M Tarlov	500 00
Clerical expense	614 12
	\$ 7,460 69
Balance December 31, 1943	\$18 204 10

The financial summary for 1943 is presented, also brief accounts of the grants closed during the year, of pending grants from previous years, and a list of the grants made in 1943

Respectfully submitted

COMMITTEE ON SCIENTIFIC RESEARCH OF
THE AMERICAN MEDICAL ASSOCIATION

JOHN J MORTON, Rochester, N Y.	Term expires, 1948
E W GOODPASTURE, Nashville, Tenn	Term expires, 1947
LUDWIG HEKTOEN, Chicago	Term expires, 1946
MARTIN H FISCHER, Cincinnati	Term expires, 1945
N W JONES, Portland, Ore	Term expires, 1944

GRANTS OF COMMITTEE ON SCIENTIFIC RESEARCH

NEW GRANTS—1943

- Grant 654 Reginald Fitz, Peter Bent Brigham Hospital Boston, \$100, study of exophthalmic goiter See grant 635 1942
- Grant 655 Arthur M Lassek, Medical College of the State of South Carolina, \$300, effect of hemiplegia on the pyramidal tract See grant 632, 1942
- Grant 656 Warren O Nelson, Wayne University, \$300, lipids in the adrenal cortex
- Grant 657 Frederick M Allen, New York Medical College, \$500, problems of shock See grant 646, 1942
- Grant 658 Meyer M Harris New York State Psychiatric Institute, \$250 muscular disease See grant 648, 1942
- Grant 659 Deborah V Dauber, Michael Reese Hospital Chicago \$446 57, atherosclerosis in the chick (Cardiac Research Fund) See grant 647, 1942
- Grant 660 Wesley W Spink, University of Minnesota, \$250, staphylococcal infection See grant 630 1942
- Grant 661 Roland K Meyer, University of Wisconsin, \$500, anti hormones See grant 612, 1941

Grant 662 Katharine M Howell, Michael Reese Hospital, Chicago, \$750, amebic dysentery

Grant 663 L R Cerecedo Fordham University, \$600, vitamin B deficiencies in rats and mice See grant 631, 1941

Grant 664 S A Thompson, New York Medical College, \$350, omental grafts in the thorax

Grant 665 Paul Thomas Young, University of Illinois, \$300, food preferences in the rat See grant 619, 1941

Grant 666 Ulrich Friedemann, Jewish Hospital of Brooklyn, \$1 500, tetanus toxins See grants 583, 1940, and 653, 1942

Grant 667 I M Tarlov, New York Medical College, \$500, regeneration of crura equina See grant 634, 1942

STATE OF GRANT AIDED WORK

1 GRANTS CLOSED DURING THE YEAR

A RESULTS PUBLISHED OR READY FOR PUBLICATION

Grant 441, 1937 Edward S West and G E Burget, University of Oregon Medical School, \$350, diuretic action and chemical metabolism of sorbitol Todd, W R, Myers, J, and West, E S On the Metabolism of Sorbitol and Mannitol, *J Biol Chem* 127:275, 1939 Richard son Howard L, Kennedy, James C and West, Edward S Diuretic and Other Effects of Intravenous Sorbitol and Sucrose, *North West Med* 42:80 1943

Grant 536, 1939 Catharine Macfarlane, Woman's Medical College of Pennsylvania, \$1900, value of periodic pelvic examination in detecting cancer of the uterus See grant 623, 1942 Macfarlane, Catharine, Fetterman, Faith S, and Sturgis Margaret C Report of an Experiment in the Control of Cancer of the Uterus *Quart Rev New York City Cancer Committee*, 1941 Macfarlane, Catharine Progress Report on Experiment in Control of Cancer of the Uterus, *Connecticut State M J* 5:814, 1941 Macfarlane, Catharine Precancerous Lesions of Uterine Cervix *M Woman's J*, July 1941 Scott Eleanor Analysis of Lesions of the Cervix Discovered in Periodic Pelvic Examinations of 955 Women, *M Woman's J* December 1941 Macfarlane, Catharine, Sturgis, Margaret C, and Fetterman, Faith S Report of an Experiment in the Control of Cancer of the Uterus *Pennsylvania M J* 45:348, 1942 Macfarlane, Catharine Why Die from Cancer of the Uterus, *Bull Am Soc Control Cancer* 24:2 (Dec) 1942

Grant 541, 1939 Henry Laurens, Tulane University, \$350, lowering of arterial pressure by carbon arc radiation Refund \$67 34 Laurens, Henry, and Graham, J S The Influence of the Pressure Lowering Effect of Carbon Arc Radiation, *M Rec* 154:146, 1941 Graham, John S Adrenal Cortex and Blood Pressure Response to Carbon Arc Irradiation, *Am J Physiol* 139 604, 1943, Effect of Carbon Arc Irradiation and Adrenal Cortical Preparations on Capillary Permeability, *Proc Soc Exper Biol & Med* 54:101, 1943

Grant 557, 1939 W D Armstrong, University of Minnesota, \$500, calcification of bone in vitro Armstrong, W D, Sperling, Louis, and Litow, Sidney Effect of Phosphoric Acid Esters on Fracture Healing, *Proc Soc Exper Biol & Med* 49 169, 1942 Sperling Louis, Armstrong, W D, and Litow, Sidney The Influence of Sodium Beta Glycerol Phosphate on the Healing of Experimental Fractures, *J Bone & Joint Surg* 24:781, 1942

Grant 574, 1940 A G Eaton, Louisiana State University, \$300, absorption and metabolism of amino acid Epton, A G, and Doty, J R The Heat Production and Blood and Urine Constituents After Administration of 1-(—) Histidine to the Dog, *J Nutrition* 21:25, 1941

Grant 576, 1940 Edward S West, University of Oregon Medical School, \$250, solution of vesical calculi Rawls, Noel B, and West, Edward S Dissolution of Vesical Calculi, *North West Med* 42:226, 1943

Grant 583, 1940 Ulrich Friedemann, Jewish Hospital of Brooklyn, \$300, genesis of tetanus See grants 653, 1942, and 666, 1943 Friedemann, Ulrich, Hollander, A, and Tarlov, I M Investigations of the Pathogenesis of Tetanus III, *J Immunol* 40:325, 1941 Friedemann, Ulrich and Hollander, Alvin Studies on Tetanal Toxin I Qualitative Differences Among Various Toxins Revealed by Bioassays in Different Species and by Different Routes of Injection *J Immunol* 47:23, 1943 II The Antitoxin Requirements of Tetanal Toxin in the Direct and Indirect Intraventricular Tests, *J Immunol* 47:29, 1943

Grant 594, 1940 I L Chaikoff, University of California, \$350, phospholipid metabolism and blood regeneration as measured by radioactive phosphorus Fishler, M C, Entenman, C Montgomery M I and Chaikoff, I L The Formation of Phospholipid by the Hypertetrazinized Dog as Measured by Radioactive Phosphorus I The Site of Formation of Plasma Phospholipids, *J Biol Chem* 119:47, 1943

Grant 595, 1940 Arthur C Allen, Mount Sinai Hospital, New York, \$250, effect of chemicals on vegetations of experimental endocarditis Refund \$148 86 W J MacNeal and others Progressive Lesions of Experimental Endocarditis *Am J Path* 20 95, 1944

Grant 599, 1941 William H Welker, University of Illinois College of Medicine, \$350 water soluble proteins Cohen, Harold R The Effect of Dry Grinding on the Properties of Proteins I Native Denatured and Coagulated Ovalbumin *Arch Biochem* 2 1, 1943

Grant 603, 1941 Norris J Heckel Rush Medical College Chicago \$250 effect of sex hormones on seminal fluid Heckel Norris J and Stemnitz Charles R The Effect of Female Sex Hormone on the Function of the Human Testis *J Urol* 16:319, 1941

Grant 608 1941 Everett I Evans Medical College of Virginia \$500 problems in surgical shock Evans Everett Idris Studies on Traumatic Shock I Blood Volume Changes in Traumatic Shock *Ann Surg* to be published Evans Everett Idris Studies on Traumatic Shock II The Restoration in Blood Volume After Traumatic Shock *Ann Surg* to be published Evans Everett Idris Studies on Traumatic Shock III Anesthesia in Shock *J A M A* to be published

Grant 612, 1941: Roland K. Meyer, University of Wisconsin, \$500, antihormones. See grant 661, 1943. Meyer, R. K.; Kupperman, H. S., and Finerty, J. C.: Increase in Gonadotropic Content of Pituitary Glands of Female Rats Treated with Antigonadotropic Serum, *Endocrinology* 30:662, 1942. Marvin, Horace N., and Meyer, Roland K.: Progonadotropic and Aspecific and Aspecific Effects of the Serum of a Horse Immunized with Extracts of Sheep Pituitary Glands, *Endocrinology* 32:271, 1943.

Grant 620, 1941: T. T. Chen, University of California, \$150, illustrations of malarial parasites. Chen, T. T.: The Nuclei in Avian Malaria Parasites. I. The Structure of Nuclei in Plasmodium elongatum with Some Considerations on Technique, *Am. J. Hyg.*, to be published.

Grant 621, 1941: William M. Cahill, Wayne University College of Medicine, \$175, self selection of food in relation to tumor growth. Cahill, W. M.; Dunning, W., and Smith, A. H.: A Free Choice Dietary Study of Tumor-Bearing Rats, *Cancer Research* 3:830, 1943.

Grant 624, 1942: Hans Popper, Cook County Graduate School of Medicine, Chicago, \$300, vitamin A in tissues. Ragins, Alex B., and Popper, Hans: Variation of Vitamin A Fluorescence in the Cyclic Changes of the Ovary, *Arch. Path.* 54:647, 1942; Popper, Hans, and Loeffler, Ernest: Fluorescent Granules at the Glomerular Pole of Human Kidneys, *Proc. Soc. Exper. Biol. & Med.* 53:68, 1943; Steigmann, Frederick; Popper, Hans, and Meyer, Karl A.: Liver Function Tests in Clinical Medicine, *J. A. M. A.* 122:279, 1943; Meyer, Karl A.; Steigmann, Frederick; Popper, Hans, and Walters, William H.: Influence of Hepatic Function on Metabolism of Vitamin A, *Arch. Surg.* 47:26, 1943; Steigmann, Frederick, and Popper, Hans: Intrahepatic Obstructive Jaundice, *Gastroenterology* 1:645, 1943; Popper, Hans; Steigmann, Frederick; Meyer, Karl A., and Zevin, S. S.: Relation Between Hepatic and Plasma Concentrations of Vitamin A in Human Beings, *Arch. Int. Med.* 72:439, 1943.

Grant 625, 1942: Enid Rodaniche, University of Chicago, \$500, study of chemotherapeutic agents on intestinal flora in infectious conditions. Refund \$170.73. Rodaniche, E. C., and Palmer, W. L.: The Action of Tyrothricin on Fecal Streptococci in Vitro and in Vivo, *J. Infect. Dis.* 72:154, 1943; Rodaniche, Enid: The Fate of the Virus of Lymphogranuloma Venereum in Infected Mice Receiving Sulfonamide Therapy, *J. Infect. Dis.* 73:173, 1943.

Grant 627, 1942: Francis J. Braceland, Loyola University School of Medicine, Chicago, \$500, carbohydrate disturbances in schizophrenia. Meduna, L. J.; Braceland, F. J., and Vaichulis, John: Diagnostic Difficulties and Levulose Tolerance Test in "Functional" Mental Diseases, *Dis. Nerv. System* 4:101, 1943.

Grant 630, 1942: Wesley W. Spink, University of Minnesota, \$300, nutrition and immunology of staphylococci. See grant 660, 1943. Spink, Wesley W.; Vivino, Jean J., and Mickelson, Olaf: Effects of Cozymase upon Growth of Staphylococci and Antistaphylococcal Action of Sulfonamide Compounds, *Proc. Soc. Exper. Biol. & Med.* 50:31, 1942; Spink, Wesley W., and Vivino, Jean J.: Effect of Sulfonamide Compounds upon Staphylococcal, *Proc. Soc. Exper. Biol. & Med.* 50:37, 1942; Vivino, Jean J., and Spink, Wesley W.: Sulfonamide-Resistant Strains of Staphylococci: Clinical Significance, *Proc. Soc. Exper. Biol. & Med.* 50:336, 1942.

Grant 632, 1942: A. M. Lassek, Medical College of South Carolina, \$300, retrograde degeneration in the pyramidal tract. See grant 655, 1943. Lassek, A. M.: The Pyramidal Tract, A Study of Retrograde Degeneration in the Monkey, *Arch. Neurol. & Psychiat.* 48:561, 1942. Lassek, A. M.: Retrograde Degeneration, Effect of Hemisections on the Homolateral Axons of the Spinal Cord, *Arch. Neurol. & Psychiat.* 49:878, 1943.

Grant 633, 1942: Oliver P. Jones, University of Buffalo, \$250, effect of antianemic principle on embryonic blood cells. See grant 652, 1942. Jones, O. P.: Mitotic Activity of Primitive Erythroblasts Increased by Administration of Antipernicious Anemia Preparations to Pregnant Rats, *Anat. Rec.* 85:321, 1943. Jones, Oliver P.: Morphologic, Physiologic, Chemical and Biologic Distinction of Megaloblasts, *Arch. Path.* 35:752, 1943.

Grant 634, 1942: I. M. Tarlov, Jewish Hospital, Brooklyn, \$500, study of plasma clot in suture of nerves in monkeys. See grant 667, 1943. Tarlov, I. M.; Goldfarb, Alvin I., and Benjamin, Bernard: A Method for Measuring the Tensile Strength and Stretch of Plasma Clots, *J. Lab. & Clin. Med.* 27:1333, 1942. Tarlov, I. M., and Benjamin, Bernard: Plasma Clot and Silk Suture of Nerves. I. An Experimental Study of Comparative Tissue Reaction, *Surg., Gynec. & Obst.* 76:366, 1943. Goldfarb, A. I., Tarlov, I. M.; Bojar, S., and Wiener, A. S.: Plasma Clot Tensile Strength Measurement: Its Relation to Plasma Fibrinogen, *J. Clin. Investigation* 22:183, 1943. Tarlov, I. M.; Denslow, C.; Swartz, S., and Pineles, D.: Plasma Clot Suture of Nerves: Experimental Technique, *Arch. Surg.* 47:44, 1943.

Grant 638, 1942: Charles W. Turner, University of Missouri, \$600, mechanism of lactation. Refund \$36.89. Meites, Joseph, and Turner, C. W.: Studies Concerning the Mechanism Controlling the Initiation of Lactation at Parturition, *Endocrinology* 30:711, 719 and 726; 31:340, 1942. Hurst, Victor, and Turner, C. W.: Lactogenic Hormone Content of Anterior Pituitary Gland of Albino Mouse as Compared to Other Species, *Endocrinology* 31:334, 1942. Meites, Joseph; Trentin, J. J., and Turner, C. W.: Effect of Adrenalectomy on the Lactogenic Hormone and Initiation of Lactation, *Endocrinology* 31:607, 1942. Hurst, V.; Meites, J., and Turner, C. W.: Assay of Adrenals for Lactogenic Hormone, *Proc. Soc. Exper. Biol. & Med.* 49:592, 1942.

Grant 640, 1942: Barnett Sure, University of Arkansas, \$400, vitamin B complex. See grant 601, 1941. Sure, Barnett: Dietary Requirements for Fertility and Lactation. XXXI. Further Studies on the Role of p-Aminobenzoic Acid and Inositol in Lactation and Growth of the Albino Rat, *J. Nutrition* 26:275, 1943.

Grant 642, 1942: Deborah V. Dauber, Michael Reese Hospital, \$500, atherosclerosis in the chick. (Cardiac Research Fund.) See grant 659, 1943. Dauber, D. V., and Katz, L. N.: Experimental Atherosclerosis in the Chick, *Arch. Path.* 36:473, 1943.

Grant 646, 1942: Frederick M. Allen, New York Medical College, \$500, surgical shock. See grant 657, 1943. Allen, Frederick M.: Theory and Therapy of Shock, *Am. J. Surg.* 61:79, 1943; Allen, Frederick M.: Experiments on Theory and Therapy of Shock, *Arch. Physical Therapy* 24:327, 1943.

Grant 651, 1942: Roger M. Reinecke, University of Minnesota, \$300, carbohydrate metabolism of the kidney. Reinecke, Roger M.: The Kidney as a Source of Glucose in the Eviscerated Rat, *Am. J. Physiol.* 140:276, 1943.

Grant 657, 1943: Frederick M. Allen, \$500, problems of shock. See grant 646, 1942. Allen, Frederick M.: Theory and Therapy of Shock, *Am. J. Surg.* 62:80, 1943.

B. NO RESULTS PUBLISHED

Grant 522, 1938: Ludwig A. Emge, Stanford University School of Medicine, \$500, relation of sex hormones to tumor growth. Research has been discontinued indefinitely on account of the war service of the grantee.

Grant 533, 1939: Hardy A. Kemp and W. M. Fisher, Baylor University, \$500, venom of southern and southwestern scorpions. Refund \$241.90. Work discontinued because the war cut off the supply of scorpions.

Grant 611, 1941: M. R. Todd, University of Oregon Medical School, \$200, the physiologic effects of canine distemper vaccine. Active research has been suspended on account of the war. Unused balance of \$94.84 refunded.

Grant 636, 1942: A. McGhee Harvey, Vanderbilt University School of Medicine, \$500, secretion of thymus. Refund \$422.34. Work discontinued when grantee enlisted in the Army.

Grant 637, 1942: John R. Paine, University of Minnesota, \$620, study of oxygen poisoning. Refund \$619.35. Work discontinued on account of the war.

Grant 652, 1942: Oliver P. Jones, University of Buffalo, \$570, erythropoietic action of extract of human stomach. See grant 633, 1942. Refund \$124.27. Research suspended on account of increased academic duties of grantee.

2. WORK IN PROGRESS

Grant 479, 1937: Tracy J. Putnam, Boston City Hospital, \$200, injuries to the cervical portion of the cord. This research has been suspended for the duration.

Grant 481, 1937: Warren O. Nelson, Wayne University College of Medicine, \$200, synthetic androgenic substances.

Grant 504, 1938: Wallace M. Yater, Georgetown University Medical School, \$500, histopathology of "bundle branch" block.

Grant 518, 1938: Harold D. West, Meharry Medical College, \$100, synthesis of dl-threonine. See grant 559, 1939.

Grant 559, 1939: Harold D. West, Meharry Medical College, \$50, synthesis of dl-threonine. See grant 518, 1938.

Grant 567, 1940: Armand J. Quick, Marquette University, \$275, conversion of prothrombin to thrombin. Quick, A. J.: Prothrombin Concentration of the Blood in Various Species, *Am. J. Physiol.* 132:239, 1941. Quick, A. J.: Effect of Air Currents on Plasma Prothrombin, *Proc. Soc. Exper. Biol. & Med.* 50:317, 1942.

Grant 570, 1940: William H. Sweet, University of Chicago, \$300, course of nerve fiber tracts of the temporal lobe.

Grant 571, 1940: Joseph T. King, University of Minnesota, \$280, antagonistic effect of tissues on the action of sulfanilamide. Jensen, N. K., and Nelson, M. C.: Local Sulfanilamide in Compound Fractures, *Surg., Gynec. & Obst.* 75:34, 1942.

Grant 582, 1940: Charles W. Greene, Stanford University, \$500, physiology of the coronary system in monkeys. Refund \$160.48.

Grant 584, 1940: Oscar V. Batson, University of Pennsylvania, \$200, nystagmus.

Grant 591, 1940: Percival Bailey, University of Illinois, \$500, effects of electrolytic lesions in the periaqueductal gray matter of the Macacus monkey. Bailey, Percival, and Davis, E. W.: Effects of Lesions of Periaqueductal Gray Matter in the Cat, *Proc. Soc. Exper. Biol. & Med.* 51:305, 1942; The Syndrome of Obstinate Progression in the Cat, *ibid.* p. 307.

Grant 605, 1941: Harry G. Day, Indiana University, \$400, physiologic significance of zinc. Active research has been suspended for the duration.

Grant 607, 1941: Fritz Levy, Davis Memorial Hospital, Elkins, W. Va., \$250, study of marrow cells.

Grant 609, 1941: C. E. Cahn-Bronner, University of Illinois College of Medicine, \$300, bacterial metabolism.

Grant 613, 1941: Robert W. Virtue, University of Denver, \$200, formation of cholic acid. [See grant 499, 1938, report for 1940.] Research suspended because grantee is in the Army.

Grant 616, 1941: Robert S. Dow, University of Oregon Medical School, \$250, effects of clotting in cerebral veins. See grant 566, 1940.

Grant 617, 1941: Mary Juhn, University of Maryland College of Medicine, \$500, tests of applicability of feather germ reaction to tumor diagnosis.

Grant 619, 1941: Paul Thomas Young, University of Illinois, \$500, appetites and food preferences in the rat. See grants 641, 1942, and 665, 1943.

Grant 623, 1942: Catharine Macfarlane, Women's Medical College of Pennsylvania, \$2,500, value of periodic pelvic and breast examination in detecting cancer. See grant 536, 1939.

Grant 626, 1942: Peter P. H. de Bruyn, University of Chicago, \$400, study of osteogenic substance in laying birds.

Grant 629, 1942: Daniel J. Glomset, Des Moines, Iowa, \$500, cardiac conduction—disturbances of ventricular conduction.

Grant 631, 1942: L. R. Cerecedo, Fordham University, \$500, vitamin B deficiency of rats and mice. See grant 663, 1943.

Grant 635 1942 Reginald Fitz, Peter Bent Brigham Hospital, Boston, \$200, how does hyperthyroidism begin clinically? See grant 654, 1943

Grant 641, 1942 Paul Thomas Young, University of Illinois, \$500, appetite and food preferences in the rat See grants 619, 1941, and 665, 1943

Grant 644, 1942 Jacob Rabinovitch, Jewish Hospital, Brooklyn, \$240, effect of heparin on thrombosis Rabinovitch, Jacob and Pines, Bernard The Effect of Heparin on Experimentally Produced Thrombosis, *Surgery* 14: 669, 1943

Grant 648, 1942 Meyer M Harris, New York State Psychiatric Hospital, \$250, further research on muscular disease See grant 658, 1943

Grant 649 1942 Arthur H Smith, Wayne University College of Medicine, Detroit, \$200, metabolism of citric acid

Grant 650, 1942 Tuberculosis Committee, Minnesota State Medical Association, J A Myers, chairman, \$1,000, tuberculosis survey of Meeker County, Minn

Grant 653, 1942 Ulrich Friedemann, Jewish Hospital, Brooklyn, \$750 types of tetanus toxin See grants 583, 1940, and 666, 1943

Report of the Committee on Therapeutic Research

The Committee on Therapeutic Research, a standing committee of the Council on Pharmacy and Chemistry encourages scientific investigations in the field of therapeutics by providing funds for the prosecution of necessary research

During the year 1943 the committee issued twenty-one new grants A detailed list of these grants, together with a list of publications during 1943, and of unexpended grants made before Jan 1, 1943 are included in this report

The following is a list of the investigations conducted with the assistance of grants made by the Committee on Therapeutic Research, reports of which were published during 1943

Effects of Certain Analeptic Drugs on Spontaneous Running Activity of the White Rat, M L Tainter *J Comp Psychol* 36: 143 (Oct) 1943

The Stimulant Power of Secondary and Tertiary Phenyl Isopropyl Amines, Armando N Novelli and M L Tainter *J Pharmacol & Exper Therap* 77: 324 (April) 1943

The Lactogenic Hormone and Mammogen, Abraham White *Ann New York Acad Sc* 43: 341 (Feb 26) 1943

Preparation and Properties of Pituitary Adrenotropic Hormone George Sayers Abraham White and C N H Long *J Biol Chem* 149: 425 (Aug) 1943

Influence of Adrenal Cortical Secretion on Blood Elements Thomas F Dougherty and Abraham White *Science* 98: 367 (Oct 22) 1943

Effect of Pituitary Adrenotropic Hormone on Lymphoid Tissue Thomas F Dougherty and Abraham White *Proc Soc Exper Biol & Med* 53: 132, 1943

Effect of Pituitary Adrenotropic Hormone on Cholesterol Content of Rat Adrenal Glands, George Sayers, Marion A Sayers, Abraham White and C N H Long *Proc Soc Exper Biol & Med* 52: 200, 1943

Preparation of Pituitary Adrenotropic Hormone, George Sayers, Abraham White and C N H Long *Proc Soc Exper Biol & Med* 52: 199, 1943

Staphylococcal Meningitis from Hippocrates to LeGendre and Beausenat, Ward J MacNeal, Frances C Frisbee and Anne Blevins *Arch Otolaryng* 37: 199 (Feb) 1943

Thrombophlebitis of the Cavernous Sinus Ward J MacNeal, Frances C Frisbee and Anne Blevins *Arch Ophthalm* 29: 231 (Feb) 1943

Bacteriophage Therapy of Staphylococcal Septic Obstruction of the Cavernous Sinus, Ward J MacNeal Frances C Frisbee and Anne Blevins *Arch Ophthalm* 29: 341 (March) 1943

Reported Recoveries from Staphylococcal Meningitis 1893 1941 Ward J MacNeal, Frances C Frisbee and Anne Blevins *Arch Otolaryng* 37: 349 (March) 1943

Recoveries from Staphylococcal Meningitis Following Bacteriophage Therapy, Ward J MacNeal, Frances C Frisbee and Anne Blevins *Arch Otolaryng* 37: 507 (April) 1943

Early Lesions of Experimental Endocarditis Lenta, Ward J MacNeal Martha Jane Spence and Alice E Slavkin *Am J Path* 19: 733 (Sept) 1943

Effect of Temperature on Urine and Phenolsulfonphthalein Excretion of White Rats at High Altitudes, Herbert Silvette *Federation Proc* 2: 46 (March 16) 1943

Influence of Postpituitary Extract on the Polyuric Response of White Rats Exposed to Low Barometric Pressure Herbert Silvette *Federation Proc* 2: 92 (March 16) 1943

Some Effects of Low Barometric Pressures on Kidney Function in the White Rat, Herbert Silvette *Am J Physiol* 140: 374 (Dec) 1943

Chlorophyll An Experimental Study of Its Water Soluble Derivatives in Wound Healing, Lawrence W Smith and Alfred E Livingston *Am J Surg* 62: 358 (Dec) 1943

Magnesium Sulfate in Paroxysmal Tachycardia, Linn J Boyd and David Scherf *Am J Sc* 206: 43 (July) 1943

Metabolism of the Perfused Dog's Brain Carroll A Handley H Morrow Sweeney, Quinten Scherman and Robert Severance *Am J Physiol* 140: 190 (Nov) 1943

The Effect of Sodium, Potassium and Thiosulfate Ions on Anaphylaxis Robert G Carlson and Richard W Whitehead *J Allergy* 14: 462 (Sept) 1943

A Modern Explanation of the Gastric Emptying Mechanism, J P Quigley *Am J Digest Dis* 10: 418 (Nov) 1943

Evidence That Body Irritations or Emotions Retard Gastric Evacuation, Not by Producing Pylorospasm But by Depressing Gastric Motility, J P Quigley, H J Bivort, M R Read and B L Brofman *J Clin Invest* 22: 839 (Nov) 1943

Vitamin A and the Toxic Action of Dibenzanthracene on the Tissues Alfred Goerner and M Margaret Goerner *Cancer Research* 3: 833 (Dec) 1943

The Effects of Various Sulfonamide Drugs on the Electrocardiogram of the Dog Roberta Hafkeshring, Esther M Greisheimer and Grace L Wertenberger *Am Heart J* 26: 333 (Sept) 1943

Injections of Gold Sodium Thiosulfate Plus Ultraviolet Irradiation Otto E L Schmidt, Ira C Evans and William B Chamberlin Jr *Arch Dermat & Syph* 47: 478 (April) 1943

Effects of Age and Sex on the Margin of Safety of "D-Lysine Sodium Vinbrutal and of Calcium 5-Ethyl 5-(2-Butyl) N-Methyl Barbituric Acid in the Albino Rat Harald G O Holck, James R Weeks, Donald R Matheson and Beatrice Duis *J Am Pharm A (Scientific Edition)* 32: 180 (July) 1943

The Sulfonamide Treatment and Clinical Significance of Chronic Biliary Tract Infections Lester M Morrison William A Swalm, W Emory Burnett Frank W Konzelmarn and Earle J Spurling *Gastroenterology* 1: 373 (June) 1943

Intravenous Injections of Soluble Tin Compounds Joseph Seifter and Edward S Rambousek *J Lab & Clin Med* 28: 1344 (Aug) 1943

Success and Failure of Local Anesthetics R Beutner *Anesth & Analg* 22: 121 (May June), 205 (July Aug) 1943

Caffeine Withdrawal Headache, Robert H Dre shuch and Carl Pfeiffer *J Lab & Clin Med* 28: 1212 (July) 1943

The Effect of Gastrectomy on Growing Monkeys, Smith Freeman Victor H Hough Herman Wigodsky and A C Ivy *Gastroenterology* 1: 199 (Feb) 1943

Seasons and Toxicity of Neosphenamine and Sulfanilamide Alexander J Nedzel *Urol & Gynae Re* 40: 152 (March) 1943

The Effect of Diet on the Action of Certain Sulfonamides Esther M Greisheimer Roberta Hafkeshring and Grace L Wertenberger *Federation Proc* 2: 17 (March 16) 1943

During 1943 the following grants were made

Grant 493 J P Quigley, Department of Physiology, Western Reserve University School of Medicine, to investigate a reasonably standard type of peptic ulcer which is sensitive to influences hastening or retarding the healing process, \$300

Grant 494 Amadeo S Marrazzi, professor of pharmacology, Lovola University School of Medicine to investigate sympathomimetic amines \$500

Grant 495 Harry Beckman professor of pharmacology, Marquette University School of Medicine to investigate continuous quinine administration in experimental malaria infections, \$250

Grant 496 W F Hamilton, professor of pharmacology and physiology, University of Georgia School of Medicine to investigate the intra vascular pressures of unanesthetized animals and man by means of the hypodermic manometer, \$125

Grant 497 E Ross Hart assistant professor of pharmacology, Jefferson Medical College of Philadelphia, to investigate the pharmacologic properties of N-allyl normorphine and related compounds, \$250

Grant 498 Linn J Boyd, director of medicine, and Kurt Lange clinical instructor in medicine, New York Medical College to investigate the effect of cold in the treatment of shock, \$300

Grant 499 Joseph Litwins, clinical instructor in medicine, New York Medical College, to investigate the chemistry and hematology of blood donors, \$200

Grant 500 W J MacNeal director of the Laboratories of Bacteriology, New York Post Graduate Medical School and Hospital, to investigate experimental viridans endocarditis, \$400

Grant 501 W J MacNeal director of the Laboratories of Bacteriology, New York Post Graduate Medical School and Hospital, to investigate the bacteriophage phenomenon and therapeutic application of bacteriophages \$400

Grant 502 Julian P Maes, Department of Pharmacology, Dartmouth College to investigate the part played by the red blood corpuscle concentration of the systemic circulation in the maintenance of blood pressure at different levels of vasoconstrictor tone, \$150

Grant 503 A T Miller Jr, assistant professor of physiology, University of North Carolina School of Medicine to investigate the factors concerned in individual differences in susceptibility to anoxia, \$250

Grant 504 Thomas G Morrione, Long Island College of Medicine to investigate the deranged estrogen metabolism accompanying cirrhosis of the liver, \$250

Grant 505 James Orten, assistant professor of physiologic chemistry, Wayne University College of Medicine, to investigate the relationship of dietary protein to porphyrin metabolism in the rat \$250

Grant 506 Andrew I Burton, assistant professor of pharmacology, Howard University to investigate (1) the distribution of sulfanilamide in maternal and fetal tissues at various stages of pregnancy, (2) the toxic effects of quinine on the fetus in utero \$600

Grant 507 J Max Little, assistant professor of physiology and pharmacology, and R E Miller, Wake Forest College to investigate the suitability of gelatin as a blood substitute, \$400

Grant 508 Lawrence W Smith professor of pathology Temple University Medical School and Hospital, to investigate the optimal combinations of sulfonamides and of chlorophyll for the healing of infected wounds, \$500

Grant 509 Thomas H McGavack associate professor of medicine New York Medical College, to investigate water balance under the influence of various hormones \$350

Grant 510 Louis S Goodman chairman Department of Pharmacology and Physiology University of Vermont College of Medicine to investigate benzimidazole in comparison with other central nervous system depressants \$800

Grant 511 K A C Elliott Chemical Research Laboratory, Institute of the Pennsylvania Hospital to investigate the effects of low and high oxygen tensions on brain metabolism, \$500

Grant 512 Essie White Cohn, associate professor of chemistry, University of Denver to investigate the effect of sulfonamide drugs on the glycogen content of the liver of rabbits and rats \$200

Grant 513 Ruth E Miller, professor of bacteriology Woman's Medical College of Pennsylvania to investigate the relationship between iron mechanisms and bacterial respiration \$412 50

The following grants were issued before Jan. 1, 1943. In some cases the grant has expired and an unexpended balance remains; or the work is not yet completed, or not yet published.

Grant 164: E. L. Jackson, associate professor of pharmacology, Emory University School of Medicine, to investigate the antagonism between sodium barbital and insulin, \$200.

Grant 232: George R. Cowgill, associate professor of physiologic chemistry, Yale University School of Medicine, to investigate the heart in vitamin B deficiency, \$250.

Grant 238: Roy R. Knecke, professor of pathology, Emory University School of Medicine, to investigate the effect of the oxidation products of aminopyrine and related drugs on the leukocyte counts of rabbits, \$250.

Grant 280: John P. Peters, professor of medicine, Yale University School of Medicine, to investigate by means of intravenous pycnography the state of ureters and kidneys in a large series of patients after delivery and subsidence of acute signs of toxemia, \$200.

Grant 297: Melvin Dresbach, Harvard Medical School, to investigate the emetic effect of some of the digitalis bodies, \$250.

Grant 306: Edwards A. Park, professor of pediatrics, Johns Hopkins University School of Medicine, to investigate rickets in the rat and the effect of solution of parathyroid on the circulation of the bone, \$75.

Grant 355: Peter K. Knoefel, associate professor of pharmacology, University of Louisville School of Medicine, to investigate the action of amines, of the epinephrine series and of related substances on the central nervous system, \$150.

Grant 391: A. R. McIntyre, professor of physiology and pharmacology, University of Nebraska College of Medicine, to investigate ouabain and cardiac muscle and metabolism, \$100.

Grant 408: Ephraim Shorr, assistant professor of medicine, Cornell University Medical College, to investigate the effect of progesterone on the vaginal smear, \$300.

Grant 412: Ann Forbes, Massachusetts General Hospital, Boston, to investigate the effect of various endocrine diseases and the administration of various endocrine products on the 17-keto steroid secretion in the urine, \$400.

Grant 430: J. P. Simonds, Department of Pathology, Northwestern University Medical School, to investigate the selective action of different types of poisons on the kidneys, \$100.

Grant 443: A. B. Baker, assistant professor of neuropsychiatry and neuropathology, and Raymond N. Bieter, professor of pharmacology, University of Minnesota Medical School, to investigate toxic effects of sulfanilamide and derivatives on nervous system and effect of vitamin B complex in prevention of such injuries, \$500.

Grant 445: Paul L. Day, professor of physiologic chemistry, and John R. Totter, instructor in physiologic chemistry, University of Arkansas School of Medicine, to investigate ocular manifestations of tryptophan deficiency, \$300.

Grant 449: Alrick B. Hertzman, professor of physiology, St. Louis University School of Medicine, to investigate peripheral circulation, \$500.

Grant 454: W. L. Mendenhall, professor of pharmacology, and Albert J. Plummer, assistant professor of pharmacology, Boston University School of Medicine, to investigate the quantitative determination of theophylline, \$50.

Grant 455: Frederick H. Pratt, professor of physiology, and Marion A. Reid, instructor in physiology, Boston University School of Medicine, to investigate the effect of cardiac drugs on the denervated lymphatic hearts, \$100.

Grant 457: Leland C. Wyman, associate professor of physiology, Boston University School of Medicine, to investigate the factors controlling the growth and functional efficiency of transplanted adrenal cortical tissue, \$372.50.

Grant 458: George Fahr, professor of internal medicine, University of Minnesota, to investigate the effects of lanatoside C on certain types of heart disease, \$100.

Grant 459: Mary E. O'Sullivan, Bellevue Hospital, New York City, to investigate the therapeutic effect of estradiol in muscular dystrophy, \$100.

Grant 462: B. K. Harned, professor of pharmacology, Versa V. Cole, associate professor of pharmacology, and Hughbert C. Hamilton, associate professor of physiology, Women's Medical College of Pennsylvania, to investigate the effects of bromide administered to pregnant rats on the learning ability of the offspring, \$288.

Grant 467: R. C. de Bodo, associate professor of pharmacology, New York University College of Medicine, to investigate the antidiuretic action of the narcotics, \$500.

Grant 472: Robert V. Brown, associate professor of physiology and pharmacology, University of North Dakota, to investigate action of pilocarpine on bile secretion, \$150.

Grant 473: Richard C. de Bodo, associate professor of pharmacology, New York University College of Medicine, to investigate temporary and permanent effects of insulin on carbohydrate metabolism with special reference to its effects on adrenalin hyperglycemia and liver glycogenolysis, \$500.

Grant 474: Arthur C. DeGraff, professor of therapeutics, New York University College of Medicine, to investigate the effectiveness of sodium thiosulfate and sodium formaldehyde sulfoxalate in treatment of cardiac arrhythmias induced experimentally by mercurial diuretics, \$400.

Grant 477: Harold C. Hodge, assistant professor of biochemistry and pharmacology, University of Rochester School of Medicine and Dentistry, to investigate acute toxicity of choline, \$200.

Grant 478: Stacy R. Mettler, associate professor of medicine, University of California Medical School, to investigate the Rh factor in blood transfusion and other immunologic aspects of blood grouping, \$400.

Grant 479: Mayo H. Soley, assistant professor of medicine and pharmacology, University of California Medical School, to investigate treatment of patients with toxic diffuse goiter by means of radioactive iodine, \$350.

Grant 483: Donald Slaughter, professor of pharmacology and physiology, Southwestern College of Medicine, to investigate the effects of sulfonamides on the regeneration of visual purple, \$150.

Grant 484: Alfred Goerner, associate professor of biologic chemistry, Long Island College of Medicine, and M. Margaret Goerner, pathologist, Brooklyn Thoracic Hospital, to investigate the toxic action of carcinogenic compounds on liver tissue, \$400.

Grant 485: Carl W. Walter, Laboratory of Surgical Research, Harvard Medical School, for construction of a hydrogen ion potentiometer to be used for studies on (a) the mobilization and deposition of bone calcium by electrolysis; (b) animal tissue response to metallic magnesium and its alloys, \$250.

Grant 488: L. R. Kaufman, director of surgery, New York Medical College, to investigate circulatory competence of the gut in cases of intestinal obstruction, \$125.

Grant 489: L. R. Kaufman, director of surgery, New York Medical College, to investigate the use of enzyme mixture for dissolving slough, \$100.

Grant 490: Andrew F. Burton, assistant professor of pharmacology, Howard University School of Medicine, to investigate the distribution of sulfanilamide and the toxic effects of quinine, \$698.

Grant 491: Fred D. Weidman, vice dean for dermatology and syphilology, University of Pennsylvania Graduate School of Medicine, to investigate the control of dermatophytosis and value of living *Bacillus subtilis* cells, \$500.

Grant 492: Abraham White, assistant professor of physiologic chemistry, Yale University School of Medicine, to investigate the hormones of the anterior pituitary gland, \$200.

TREASURER'S REPORT

Report of the Treasurer of the American Medical Association
for the Year Ended December 31, 1943

Investments (At Cost) as at January 1, 1943.....	\$2,541,309.16
Bonds Purchased (At Cost).....	913,157.30
	<hr/>
Less:	\$3,454,466.46
Bonds Called, Matured or Sold.....	196,335.13
	<hr/>
Investments as at December 31, 1943.....	\$3,258,131.33
Balance for Investment January 1, 1943.....	121,296.23
Interest Received on Investments.....	86,603.78
	<hr/>
Uninvested Funds December 31, 1943.....	207,900.01
Invested and Uninvested Funds as at December 31, 1943....	<hr/> <u>\$3,466,031.34</u>

DAVIS MEMORIAL FUND

Balance in Fund January 1, 1943.....	\$7,614.03
Interest Earned on Bank Balance Year 1943.....	95.46
	<hr/>
Funds on Deposit as at December 31, 1943.....	<hr/> <u>\$7,709.49</u>

JOSIAH J. MOORE, Treasurer.

AUDITOR'S REPORT

February 3, 1944.

To the Board of Trustees,
American Medical Association, Chicago, Illinois.
Dear Sirs:

We have examined the balance sheet of the American Medical Association, Chicago, Illinois, as of December 31, 1943, and the statement of income for the year ended on that date, have reviewed the system of internal control and the accounting procedures of the Association and, without making a detailed audit of the transactions, have examined or tested accounting records and other supporting evidence, by methods and to the extent we deemed appropriate except as hereinafter stated regarding confirmation of receivables and observation of the inventory taking.

The cash and back balances have been confirmed by count or by certificates from the depositaries. The United States Government and other marketable securities were confirmed by an acknowledgment from the Continental Illinois National Bank and Trust Company of Chicago where the securities are held for safekeeping.

We did not independently confirm the accounts receivable by communication with the debtors. The accounts receivable were reviewed as to age and collectibility and, in our opinion, the balances are fully realizable. We reviewed the plan and system of control adopted for inventory taking but we did not observe the taking of the inventories nor did we make tests of the physical existence of the quantities recorded.

Expenditures charged to property and equipment accounts during the year, in our opinion, were properly capitalized as representing additions or improvements. The provision for depreciation for the year appears to be adequate.

In our opinion, subject to the exceptions set forth in paragraph three, the accompanying balance sheet and related statement of income present fairly the position of the American Medical Association at December 31, 1943, and the results of the operations for the year, based on the accounting procedures employed by the Association regarding which the following observations are submitted:

(a) In accordance with the established practice of the Association, the accounts as stated do not include (a) unrecorded assets in respect of accrued interest on bond investments, and membership dues unpaid; and (b) provision for accrued property taxes for the year 1943, and sundry unpaid bills and wages.

(b) Subscriptions paid in advance are stated at an estimated amount which is based on cash received in December 1943, on account of 1944 subscriptions. This procedure conforms to the method used in prior years.

(c) Advance payments on publications include an estimated amount (\$131,329.53) for prepaid subscriptions to Hygeia, and the amount (\$44,876.43) received in advance for January 1944, advertising, directory information sales and service.

We have received a letter from Messrs. Loesch, Scofield, Loesch and Burke, attorneys for the Association, regarding litigation pending against the Association or its officers at December 31, 1943, which states that the following law suits had been filed:

Jean Paul Fernel.....\$1,000,000 (libel)
L. E. Polhemus..... 50,000 (claim)

The attorneys state that in their opinion these suits will be defeated.

Fidelity insurance is carried against the undermentioned officers and employees, in the amounts stated:

Dr. Olin West, Secretary and General Manager.....\$10,000.00
Dr. Josiah J. Moore, Treasurer..... 10,000.00
E. A. Hoffman, Cashier..... 10,000.00
J. E. Hartigan, Assistant Cashier..... 2,000.00
Sundry employees (ten, \$1,000.00 each)..... 10,000.00

Total Fidelity Insurance.....\$42,000.00

We have pleasure in reporting that the books are well maintained and that every facility was afforded us for the proper conduct of the examination.

Yours truly,

PEAT, MARWICK, MITCHELL & Co.

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Expenses of Councils, Bureaus and Committees for the year ended December 31, 1943.....	"2"

EXHIBIT "A"

BALANCE SHEET

AS OF DECEMBER 31, 1943

ASSETS:

Property and Equipment—at cost:		
Land	\$ 328,773.98	
Buildings	\$1,375,349.31	
Machinery and printing equipment.....	492,613.08	
Office and laboratory equipment.....	196,727.67	
	<u>2,064,690.06</u>	
Less—Reserve for depreciation.....	993,431.18	1,071,258.88
		<u>1,071,258.88</u>
Type metal (book inventory)—at average cost	22,682.03	
Total Property and Equipment.....		<u>1,422,714.91</u>
Marketable Securities—at cost (valuation based on market quotations \$3,340,311.31):		
United States Government securities.....	2,121,365.63	
Railroad, municipal, industrial and public utility bonds	1,136,765.70	3,258,131.33
		<u>3,258,131.33</u>

Representing investments of:

General fund	933,131.33
Association reserve fund.....	350,000.00
Retirement reserve fund.....	525,000.00
Building reserve fund.....	450,000.00
Depreciation reserve fund.....	<u>1,000,000.00</u>

Cash Held by Treasurer for Investment....	207,900.01
Cash in Banks and on Hand.....	<u>499,973.12</u>

Accounts Receivable:

Advertising	124,794.09
Reprints	2,655.31
Directory Report Service, 18th Edition...	1,118.53
Miscellaneous accounts receivable.....	<u>1,722.02</u>
	130,289.95

Inventories of Materials, Supplies, Work in Progress and Publications.....

Expenditures on Publications in Progress...	74,737.85
Prepaid Expenses, Deposits and Advances:	
Insurance, etc.	5,870.66
Deposits and advances.....	<u>7,476.96</u>
	13,347.62

Total\$5,711,853.17

LIABILITIES:

Accounts Payable:

Co-operative Medical Advertising Bureau....\$	19,943.45
Miscellaneous	<u>24,167.60</u>
Total Accounts Payable.....	\$ 44,111.05

Subscriptions Paid in Advance.....	61,447.08
Advance Payments on Publications.....	<u>176,205.96</u>

Net Worth:

Association reserve	350,000.00
Building reserve	450,000.00
Retirement reserve	<u>525,000.00</u>

Capital account:

Balance at December 31,
1942\$3,786,215.32

Add—Net income for the
year ended December 31,
1943 718,873.76
4,505,089.08

Deduct—Amount transferred
during year to retirement
reserve 400,000.00 4,105,089.08

Net Worth, December 31, 1943.....\$5,430,089.08

Total\$5,711,853.17

EXHIBIT "B"

INCOME ACCOUNT

FOR THE YEAR ENDED DECEMBER 31, 1943

Income:

Fellowship dues	\$ 64,883.00
Income from investments.....	82,744.08
Miscellaneous receipts and other income.....	<u>21,736.80</u>
	169,363.88

Publications—Periodicals:

Subscriptions	\$1,235,677.33
Advertising	<u>1,366,659.10</u>
	2,602,336.43
Costs and expenses—Schedule "1".....	<u>1,628,969.06</u>
	973,367.37

Books, Pamphlets and Reprints Sold.....	131,923.52
Less—Printing and other costs.....	<u>88,110.51</u>
	43,813.01

Total Income\$1,186,544.26

Expenses:

Conducting Councils, Bureaus and Committees	
—Schedule "2"	432,895.96
Legal and investigating.....	10,668.21
Miscellaneous	<u>24,106.33</u>
	467,670.50

Income in Excess of Expenses.....\$ 718,873.76

SCHEDULE "1"

PUBLICATIONS (PERIODICALS)—COSTS AND EXPENSES

FOR THE YEAR ENDED DECEMBER 31, 1943

Wages and salaries.....	\$ 790,582.11	
Paper	287,253.84	
Engravings and illustrations	30,310.47	
Ink	13,955.61	
Factory and mailing supplies.....	20,917.94	
Repairs and renewals—machinery.....	2,440.73	
Express and cartage.....	10,259.18	
Power and light.....	14,504.83	
Building expense	40,481.03	
Fuel	9,171.69	
Insurance and taxes.....	31,993.42	
Editorials, news and reporting.....	11,713.62	
Postage—first class	45,303.22	
Postage—second class	73,659.05	
Commissions—subscription and advertising.....	94,851.46	
Discounts	52,783.56	
Exchange	1,576.12	
Subscription promotion expense.....	14,482.35	
Office supplies	11,029.60	
Telephone and telegrams.....	4,265.71	
Office printing	27,642.08	
Binding	3,859.05	
Miscellaneous operating expenses.....	22,811.78	
Group hospital insurance.....	2,199.04	
Loss (profit) on sale of equipment, bad debts and recoveries net	4,306.56	
Loss on metal dress files.....	1,010.17	
	<u>1,614,951.10</u>	
Depreciation (based on estimated remaining life)		
Buildings	\$23,133.80	
Machinery	13,759.30	
Type and factory equipment.....	1,397.45	
Furniture and equipment.....	6,528.37	41,817.92
		<u>1,659,769.02</u>
Deduct: Proportion of overhead expenses charged to other publications and departments		30,799.96
Total Publications (Periodicals) Costs and Expenses		<u>\$1,628,969.06</u>

NOTE: Total wages and salaries for year 1943 amounted to \$1,202,472.14. Of this amount \$790,582.11 is included above, \$274,319.34 is shown in schedule "2" (expenses of Councils, Bureaus and Committees), and the remainder, \$137,540.69, was disbursed in connection with the 18th edition of the American Medical Directory, now in preparation, and with the printing of books, reprints and pamphlets, and printing in process at the close of the year.

SCHEDULE "2"

EXPENSES OF COUNCILS, BUREAUS AND COMMITTEES

FOR THE YEAR ENDED DECEMBER 31, 1943

Salaries and wages.....	\$274,349.34
Office printing	14,991.39
Office supplies and repairs	4,698.94
Express, telephone and telegraph	3,565.72
Postage	6,098.84
Binding	663.80
Books and periodical subscriptions	611.21
Educational material distributed	7,730.99
Travel	14,137.97
Radio broadcasting	11,525.34
Inspection of hospitals and medical schools.....	4,432.53
Association exhibits	6,826.12
Trustees' meeting expenses.....	7,162.83
Consultations, investigations, tests and honorariums.....	11,635.42
Section secretaries' conference and honorariums.....	3,089.21
State secretaries' conference.....	6,401.89
Council and bureau conferences.....	11,737.42
Committee on Scientific Research.....	5,287.82
Committee for War-time Graduate Medical Meetings.....	20,000.00
Other committee expenses.....	4,998.21
Miscellaneous	12,942.94
Total Expenses of Councils, Bureaus and Committees	<u>\$432,895.96</u>

NOTE: The above expenses are spread over the following councils, bureaus and committees as indicated: Association account \$125,297.25; Bureau of Health Education, \$40,075.25; Council on Pharmacy and Chemistry, \$44,510.63; Chemical Laboratory, \$14,439.95; Council on Physical Therapy, \$15,724.02; Council on Foods, \$11,563.10; Committee on Therapeutic Research, \$6,944.42; Council on Medical Education and Hospitals, \$61,954.36; Bureau of Legal Medicine and Forensic Medicine, \$19,816.24; of Investigation, \$9,594.17; Bureau of Industrial Health, \$23,424.16; Council on Medical Service and Public Relations, \$2,141.83; Committee on Medical Preparedness, \$11,167.64.

REPORT OF THE JUDICIAL COUNCIL

To the Members of the House of Delegates of the American Medical Association:

There has been little activity on the part of the Judicial Council during the past year. With a large portion of our members engaged in war service, leaving the patient populace in the care of those at home, nearly all physicians have been burdened almost beyond capacity. No difficult or controversial problems have come before the Council. Inquiries have been handled by correspondence. Problems discussed by the Council, in session, have been confined largely to questions regarding Fellowship in the Association. These questions have uniformly had their origin in a lack of familiarity with the Principles of Medical Ethics. We must accordingly conclude that a large portion of our membership regards the printed Principles of Medical Ethics as a complicated document to be interpreted only by experts, as each individual question arises!

At various times, resolutions have been presented in the House of Delegates directing the Judicial Council or an appointed committee to rewrite or more precisely define our Principles of Medical Ethics, giving illustrations of unethical action which would guide the ethical judgment of the membership.

Such revision of the Principles of Medical Ethics is not the answer to this problem. To illustrate or elucidate would only produce "confusion worse confounded." Rather let us firmly identify in our minds these dictionary definitions:

(a) "A Law is a rule of action established by recognized authority to enforce justice and prescribe duty."

(b) "A Principle is (1) a general truth, (2) a settled law or rule of action, especially right action, consciously adopted."

(c) "Ethics is the basic principle of rules of right action."

Law which is punitive in action deals only with a specific crime or misdemeanor and must be so particularly applied (witness the row upon row of tomes necessary to the lawyer's library) as to permit no loopholes for evasion. The American Medical Association has no laws to compel its membership to care for the sick or the public at large. That would be foreign to our conception of the Principles of Medical Ethics, which reflect our pride in "a rule of right action, consciously adopted."

The Principles of Medical Ethics are broad and permanent. They are intended to be a guide to right action. Conditions vary with different sections of the country. A physician may be almost inaccessible to people in some isolated areas, and the opposite be true in a more populous region. What may constitute ethical conduct of the physician in one section might be distinctly unethical in a section characterized by a differing set of circumstances. This is the reason for the broad application of the Principles of Medical Ethics toward one definite point—the welfare of the patient. It is the full knowledge of the conditions surrounding the patient—not the doctor—that determines whether a practice is ethical or unethical.

Many of the difficulties in interpreting the Principles of Medical Ethics are related to the physician's income from his practice. This is covered in the first sentence of that little booklet which should be in the possession of every physician from the moment of his graduation: "A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration." Truly this is a broad statement but, when conscientiously applied, dispels difficulty!

The time is approaching when those of our profession who are now in war service will be coming back home. They will return to a shattered clientele who have drifted away or who of necessity have been treated by physicians remaining at home. Chapter III, article IV, of the Principles of Medical Ethics provides for this contingency:

SEC 4—When a physician does succeed another physician in the charge of a case, he should not make comments on or insinuations regarding the practice of the one who preceded him. Such comments or insinuations tend to lower the esteem of the patient for the medical profession and so react against the critic.

SEC 7—When a physician is requested by a colleague to care for a patient during his temporary absence, or when, because of an emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as soon as possible.

SEC. 8.—When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter.

These are representative problems repeatedly presented. They serve, in an uneasy period preceding the inevitable postwar confusion, to remind every member of the American Medical Association of the bulwark of safety in his knowledge of the Principles of Medical Ethics.

Respectfully submitted.

GEORGE EDWARD FOLLANSBEE, Chairman.
EDWARD R. CUNIFFE.
WALTER F. DONALDSON.
LLOYD NOLAND.
JOHN H. O'SHEA.

REPORT OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

To the Members of the House of Delegates of the American Medical Association:

During the past year important problems relating directly to the wartime programs of medical and premedical education and house officer training have concerned the Council, in addition to numerous problems not primarily pertaining to the war.

THE WARTIME MEDICAL SCHOOL PROGRAMS

All medical schools in the United States (including the schools of basic medical sciences) are on the accelerated program. One school is on an accelerated program for only the junior and senior years. All but two schools are admitting classes every nine months, one admitting some students approximately every three months and one admitting annually.

As a combined result of acceleration and of the shortened internship, several hundred men are now on active duty in the Army and Navy Medical Corps who would ordinarily still be interning. These men commenced their senior year three months early in July 1942, graduated in March 1943 and completed the nine months internship in December 1943. Under the normal program they would remain in internships until July 1, 1944.

During the calendar year 1943 most schools graduated two classes, chiefly in March and December. In 1944 and 1945 most schools will graduate but one class. The average number of annual graduates will approximate 7,000, which is far in excess of the number graduating at any previous time. In 1905, when there were 160 medical schools in operation in this country, there were 5,606 graduates.

At the outset of the war, medical schools were advised to increase enrolments by 10 per cent, when this could be done without lowering standards. It is now apparent that some schools have increased their enrolments well beyond 10 per cent and probably beyond the point warranted by the available facilities.

The reduction in teaching staffs has increased in the past year. At the last estimate there were approximately 6,000 faculty members in service. Although this includes some men who are not physicians, it seems probable that about 10 per cent of the medical officers in the armed forces have come from faculties of medicine, which include in the neighborhood of 10 per cent of the physicians of the country. The interpretation and evaluation of these data are difficult, since many if not most of the teachers now in active service were on a part time basis, in some instances contributing only an hour or two a week to instruction. Yet it is apparent that medical schools seem to have contributed approximately as large a proportion of their faculty members to the armed forces as the proportion of physicians not engaged in scientific work who have been commissioned.

There seems to be little question that the major difficulty in maintaining adequate educational standards has been the depletion of teaching staffs. This factor exceeds in importance any deleterious effects of the accelerated program. Threats to the quality of training also lie in the unwarranted increases in enrolments in some schools and the chronic state of uncertainty in which students have found themselves, with the frequent changes that have occurred and continue to occur with respect to their medical education.

THE ARMY SPECIALIZED TRAINING PROGRAM

When it was announced that the Army Specialized Training Program was to be drastically reduced in all fields, the Council stated to the Secretary of War, the Surgeon General of the Army and the Army Specialized Training authorities that failure to provide for a constant flow of qualified students into and through the medical schools would jeopardize civilian care even if Army replacements were adequate.

The authorities decided in February that men then in medical and premedical Army Specialized Training Programs would be continued as originally planned.

Whether this ruling will enable the Army to fill the anticipated 55 per cent of freshman places in medical schools even in the late 1944 and early 1945 classes is open to question. Premedical students already accepted for those classes who are now under Selective Service deferment must complete their premedical and medical courses under deferment as civilians.

Under the present plans, qualified high school graduates under 18 years will enter the Army Specialized Training Reserve Program as premedical civilians with army scholarships. If qualified, these men will be transferred to an advanced level in the Army Specialized Training premedical program on active duty as soldiers in school on reaching the age of 18, completion of basic military training and passing a medical aptitude test. This Army Specialized Training Program will be curtailed in numbers, so that from mid-1945 on the Army will probably provide the schools with about one-half the numbers of entering freshmen originally contemplated.

There may also be assigned to medical schools under the Army Specialized Training Program a limited number of qualified soldiers, provided they have performed well in the Army-Navy (A-12,V-12) College Qualifying Test and have already completed an academic year of premedical work as civilians.

From these sources the Army will scarcely be able to supply the medical schools with half the anticipated members. With the Navy's 25 per cent of places in freshman classes, this means that about half of our premedical and medical students must be civilians. There is considerable doubt whether Selective Service will provide for deferment of these students. Even if it should do so, many qualified men will choose active duty in the Army to academic studies, and it will be difficult to fill the places in entering classes with qualified students.

THE NAVY V-12 PROGRAM

No change is contemplated in the Navy V-12 program for premedical and medical students. There is a sufficient number of men in premedical training to enable the Navy to continue to meet its commitments of 25 per cent of the places in entering and advanced classes in medical schools.

THE 9-9-9 AND QUOTA PROGRAMS FOR HOUSE OFFICERS

Effective Jan. 1, 1944 the internship was limited to nine months for all officers. A maximum of one third of these may be deferred for an additional nine months as assistant residents. One half of the assistant residents may be deferred for a third nine month period as residents. This program was proposed by the Procurement and Assignment Service as more desirable than the only available alternative, which was a twelve month internship for all medical officers, with no further deferments for any of them, so that house officers beyond the intern level would be limited to women and physically disqualified men. The latter was the only plan other than the 9-9-9 program to which the Surgeons General of the Army and Navy would agree.

The Council on Medical Education and Hospitals agreed to the 9-9-9 plan, realizing it to be educationally highly undesirable but also recognizing it as the best available under prevailing conditions.

The Procurement and Assignment Service also allotted quotas of house officers to each state and to each hospital within the state. The quotas were set at 60 per cent of the house officers on duty in hospitals in 1940, as shown by the reports of the Council on Medical Education and Hospitals. Due allowances were made for teaching hospitals and other pertinent factors, including increases in hospital admissions above 1940 in excess of the national overall increase of 14 per cent. Minor adjustments in these quotas were permitted at the state level, but it was urged that the quotas originally assigned should be departed from as little as possible.

The establishment of the quotas and the inauguration of the 9-9-9 program necessitated rapid adjustments by hospitals and house officers late in 1943. This was effected with less difficulty than was expected by many, largely as the result of the whole-hearted cooperation of all concerned.

At the request of the Procurement and Assignment Service, the Council on Medical Education and Hospitals served as a clearing house for hospitals with unfilled quotas and house officers lacking appointments. This was effected through weekly publications of lists of hospitals needing house officers in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

POSTWAR EDUCATIONAL FACILITIES FOR RETURNING MEDICAL OFFICERS

Over a year ago the Council embarked on a preliminary study of postwar educational facilities which will be available to returning medical officers. Information was sought from nearly 1,300 institutions and agencies, including hospitals, medical schools, departments of health, state medical associations and examining boards in medical specialties. A preliminary report of the findings was published in *THE JOURNAL* on Jan. 1, 1944. Refresher and review courses, postgraduate lecture and clinic series, and internships and residencies are being developed in many fields in numbers which give fair promise of meeting the probable demand from returning officers as well as from the more recent graduates who will not have been on active duty.

This study of postwar educational facilities will be continued, so that even before the close of the war the Council expects to have ready for distribution a printed list of all educational opportunities available to returning medical officers and especially planned for them.

In the Council's planning for these postwar services it became clear early that we were working entirely on the probable available supply of educational opportunities. The question of demand for them was entirely unknown and will depend on:

1. What the men now in service will desire after the war. In collaboration with other interested agencies, the American Medical Association, through the Committee on Postwar Medical Services, is obtaining information on this problem. A questionnaire has been prepared in which are included questions pertaining to the postwar educational desire of medical officers. This is being sent first to 3,000 medical officers. Later it will be sent, with the already assured cooperation of the Surgeons General of the Army, Navy and Public Health Service, to all the 55,000 medical officers in these branches of military service. Information obtained in this extensive undertaking, transferred to International Business Machine punch cards, will be indispensable for further intelligent planning by the Council.

The Committee on Postwar Medical Services has requested the Council to continue its study of supply of postwar educational facilities in the light of results obtained concerning the demand for them as revealed by the questionnaires.

2. The rate of demobilization of medical officers will bear significantly on our planning for their postwar training. Should 300 medical officers declare in the questionnaires described that they desire a year of training in (for example) orthopedic surgery, how many residencies in that will be required? If the demobilization is rapid, we shall need 300 residencies. If it is staggered over three years, 100 places may suffice. In the latter event our present residencies in this field may be adequate. It is obvious that the Council must plan the available postwar educational resources in the light of information made available by the Surgeons General of the Army, Navy and Public Health Service on the rate of demobilization of medical personnel.

The Procurement and Assignment Service has recently ruled that medical officers returning now may be appointed as house officers by hospitals in excess of the assigned quota for a period of one academic year. This should greatly facilitate the adjustment to civilian practice by returning house officers desiring further hospital training.

HOSPITAL TRAINING OF LATIN AMERICAN PHYSICIANS

The Council is continuing its interest in and assistance to Latin American physicians desiring internship and house officer training in our hospitals. These men will be turning to the United States for advanced training in greater numbers than formerly, and every encouragement should be afforded to quali-

fied men in the interests of improved inter-American relationships. An important step in this direction has been taken by the Procurement and Assignment Service, which has recently ruled that at no time need Latin American physicians be counted in the hospital quotas of house officers. This ruling makes it unnecessary for hospitals to weigh the probable effectiveness of a Latin American physician against that of men trained in our own country, since no quota place is lost by the appointment of a Latin American.

MEDICAL SCHOOLS

Two medical schools which have been on probation have sufficiently improved their educational programs to warrant removal of that probation and restoration to the status of full approval.

A new medical school at Dallas, Texas, has been developed by the Southwestern Medical Foundation. The new school employs the clinical facilities formerly used by Baylor University School of Medicine, mainly at the Parkland and associated hospitals. The basic science departments are housed in temporary structures adjacent to the Parkland hospital on property owned by the foundation. Permanent structures will be erected here after the war.

The facilities, faculty, financial status and educational program of the school were found, after two visits by Council representatives, to meet the minimum essentials for an approved medical school. The school has been added to the approved list.

Aided by advice from the Council, the Bowman Gray School of Medicine has expanded its program to include the full four years of instruction at Winston-Salem, N. C. Formerly this institution was an approved school of basic medical sciences, located at Wake Forest, N. C. After thorough investigation, Bowman Gray has been transferred to the Council's list of approved medical schools. The first class graduated in December 1943. The addition of these schools brings the Council's list to a total of 68 approved four year schools of medicine in the United States.

The University of Utah formerly operated an approved school of the basic medical sciences. It has developed a full four year program and will graduate its first class in August 1944. The Council has given aid and advice and made recommendations to the school. Assisted by these the school gives every promise of developing at least a satisfactory program.

The Council is also consulting with the University of Alabama and the University of Missouri concerning expansion from the two year to the four year status. Alabama has selected Birmingham as the site of the school and has appropriated funds for this purpose. The plans at Missouri are in the early formative stage and are even less definite in Mississippi, which is also contemplating a similar development.

The following medical schools were visited during the year by the Council for consultation and inspection services:

University of Alabama School of Medicine.
University of Arkansas School of Medicine (twice).
Emory University School of Medicine.
Bowman Gray School of Medicine.
Hahnemann Medical College and Hospital of Philadelphia.
Baylor University College of Medicine (twice).
Southwestern Medical College of the Southwestern Medical Foundation (twice).
University of Texas College of Medicine.
University of Utah School of Medicine (twice).
University of Vermont College of Medicine.

An inspection was also made of Oglethorpe University School of Medicine, which was not approved. In February 1944 this school withdrew from the field of medical education and discontinued all classes.

It appears that graduates of Middlesex University School of Medicine, which is not included on the Council's approved list, may no longer be eligible for licensure examinations in Massachusetts, which has been the only state in which these graduates have been able to practice.

The Council has received word that the Kansas City University of Physicians and Surgeons of Kansas City, Mo., another unapproved school, will discontinue medical classes in July 1944.

COLLABORATION WITH OTHER AGENCIES

The Council continues to collaborate closely with several agencies, including (1) The Association of American Medical Colleges in all matters pertaining to medical schools, (2) the

various American Specialty Boards in matters relating to the approval of residencies, (3) the Advisory Board for Medical Specialties, with which the Council held a joint meeting in February 1944, (4) the American Council on Education in problems associated with legislation providing postwar education for veterans and plans for college accreditation of academic work done by soldiers and sailors in various military educational programs, (5) the American College of Surgeons in its War Sessions and hospital program, (6) the American Hospital Association in connection with improving hospital standards, (7) the Committee on Postwar Medical Service in connection with postwar educational opportunities for returning medical officers, (8) the Baruch Committee on Physical Medicine, which the Council has aided in some of its extensive studies, (9) the Joint Orthopedic Nursing Advisory Service concerning the supply of public health nurses who have been trained in physical therapy and orthopedic nursing, and (10) the National League of Nursing Education regarding educational standards.

Government agencies with which there have been frequent conferences and close cooperation have included the offices of the Surgeons General of the Army and Navy and Public Health Service, the Army Specialized Training and Navy V-12 officials, the Coordinator of Inter American Affairs, and the Procurement and Assignment Service.

ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

In the Essentials of an Acceptable Medical School the subdivision of student time in the various departments and subjects is rigidly specified. Such precise specifications are thought to be insufficiently flexible to encourage desirable interdepartmental collaboration in the presentation of related material or the addition of new subjects to the curriculum. The recommendations of the Council for changes in the wording of the Essentials will be presented to the House of Delegates in a supplementary report.

INSPECTIONS OF HOSPITALS, TECHNICAL SCHOOLS AND SPAS, 1943

Following are summarized the inspections of hospitals and technical schools made by the Council during the year 1943:

HOSPITALS

Intern training	54
Residency and fellowships	53
Intern training and residencies	24
Registration	26
Total	157
Individual residencies and fellowships investigated	140

TECHNICAL SCHOOLS

Clinical laboratory schools	28
Physical therapy schools	7
Occupational therapy schools	6
X-ray schools	6
Total	47
Medical Record Librarian schools	2
Spas and health resorts	3
Total number of days in the field	205

CENSUS OF HOSPITALS

The twenty-third annual census of hospitals covering the year 1943 was published in the Hospital Number of THE JOURNAL, March 25. This report of the Council included 6,655 registered hospitals, a net increase of 310 over the previous year. The number of patients admitted in 1943 set an all time record of 15,374,698 as compared with 12,545,610 in 1942. In addition there were 1,924,591 hospital births, an increase of 253,992 over the previous twelve months period. Similarly the daily patient load, or average census, increased by 131,096, not counting newborn infants. Equally significant is the expansion of hospital beds from 1,383,827 in 1942 to 1,649,254 in 1943. This increase of 265,427 beds, incident to wartime needs, is the equivalent of a new 727 bed hospital for each day of the year.

The greatest gain occurred in the federal hospitals, which now have 476,673 beds, or 255,735 more than in 1942. Their admissions increased by 2,356,885, whereas a decrease of 103,733 occurred in the state, county and city hospitals. The non-governmental group, however, comprising the church related institutions, other nonprofit associations and the proprietary hospitals, showed a substantial increase of 575,936. The general hospitals, with 51 per cent of the total bed capacity, had

14,454,638 admissions, or 94 per cent of all patients admitted in 1943. Their participation in the recent expansion of hospital service can be measured by an increase of 2,820,350 admissions during the year.

A new feature introduced was a study of hospital facilities for contagious diseases. This shows that 1,649 hospitals provide 39,282 beds for this purpose, exclusive of 8,313 beds available in 55 isolation hospitals.

Reports were also included regarding internships and residencies, schools of nursing education and administrative, nursing and technical personnel in hospitals. On Jan. 1, 1944 there were 715 civilian hospitals approved for intern training and 659 for residencies. These include 320 hospitals which are accredited in both classifications. A total of 1,411 schools of nursing are listed with an enrolment of 110,222 student nurses, as compared with 98,166 in 1942.

APPROVED HOSPITALS, APRIL 1, 1944

Following is a summary of hospitals registered and hospitals approved for internships, residencies and fellowships:

Hospital Register

Hospitals registered, April 1, 1943	6,345
Registered during the year	456
Closed or transferred to unclassified file	146
Hospitals registered, April 1, 1944	6,655

Approved Internships

Hospitals approved, April 1, 1943	743
Approved during year	48
Removed from approved list	9
Hospitals approved, April 1, 1944	782

Approved Residencies and Fellowships

Hospitals approved, April 1, 1943	666
Approved during year	85
Removed from approved list	11
Hospitals approved, April 1, 1944	740

APPROVED TECHNICAL SCHOOLS, APRIL 1, 1944

The status of technical schools approved by the Council is as follows:

Schools for Clinical Laboratory Technicians

Approved schools, April 1, 1943	227
Approved during year	18
Removed from approved list	2
Approved schools, April 1, 1944	243

Schools for Physical Therapy Technicians

Approved schools, April 1, 1943	22
Approved during year	7
Removed from approved list	1
Approved schools, April 1, 1944	28

Schools of Occupational Therapy

Approved schools, April 1, 1943	7
Approved during year	6
Removed from approved list	0
Approved schools, April 1, 1944	13

Medical Record Librarian Schools

Approved schools on initial list, June 6, 1943	9
Approved since June 6, 1943	1
Approved schools, April 1, 1944	10

ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR X-RAY TECHNICIANS

On instructions from the House of Delegates at the June 1943 meeting, the Council is collaborating with the American Registry of X-Ray Technicians, the American College of Radiology and the American Society of X-Ray Technicians in the formulation of the Essentials of an Acceptable School for X-Ray Technicians. These essentials will be presented to the House of Delegates in a supplementary report.

EDUCATIONAL STANDARDS IN OPTOMETRY

The Committee on the Conservation of Vision, established by the Board of Trustees as directed by the House of Delegates, has requested the Council "to undertake an investigation of the educational standards of optometry (preferably in cooperation with the Council on Education of the American Optometric Association) for the purpose of raising the standards. . . ." The Council refers this request to the House of Delegates for instructions.

GRADUATE CONTINUATION COURSES

Graduate opportunities for continuation courses for practicing physicians offered in semiannual periods were published in THE JOURNAL of July 3 and Dec. 18, 1943.

COUNCIL PUBLICATIONS

Major publications during 1943 and thus far in the present year include:

Hospital Service in the United States.
State Board Number of THE JOURNAL.
Medical Education in the United States and Canada.
Compilation of Papers Read at the Annual Congress on Medical Education and Licensure.
Choice of a Medical School.
Postwar Graduate Medical Education.
Plan for the Allocation of Interns and Residents in Hospitals.
Approved Colleges of Arts and Sciences.
Schools for Clinical Laboratory Technicians.
Schools for Physical Therapy Technicians.
Schools of Occupational Therapy.
Schools for Medical Record Librarians.

IN APPRECIATION

The Council has met with government and military officials a number of times during the year and wishes to express its appreciation for their recognition of the importance of maintaining adequate educational standards in these difficult times and also for their readiness in supplying data for the Educational Number of THE JOURNAL and for their personal presentations at the Annual Congress on Medical Education and Licensure.

The Council is also deeply grateful to the executive officers of medical schools, hospitals and licensing boards and technical schools for their cordial cooperation in supplying the various data needed for the annual compilation of statistics and for maintenance of the records.

Finally, the Council desires to express its appreciation to the officers and trustees of the American Medical Association for their whole hearted cooperation and assistance in the conduct of the various activities of the past year.

Respectfully submitted.

RAY LYMAN WILBUR, Chairman.
CHARLES GORDON HEYD.
H. G. WEISKOTTEN.
J. H. MUSSER.
HARVEY B. STONE.
REGINALD FITZ.
RUSSELL L. HADEN.
VICTOR JOHNSON, Secretary.

REPORT OF THE COUNCIL ON
SCIENTIFIC ASSEMBLY

To the Members of the House of Delegates of the American Medical Association:

The official scientific program to be presented at the 1944 annual session of the American Medical Association is submitted as a part of the report of the Council on Scientific Assembly. The preparation of this program involved the expenditure of unusual effort on the part of section officers and of the Council, because of the unsettled conditions created by the war emergency.

The Council on Scientific Assembly desires to offer an expression of appreciation and gratitude to the section officers for their sacrifice and effort in the preparation of the program, and to those who are to participate in its presentation, most of whom have been overburdened because of the very heavy demands made on them as on practically all physicians.

CONTINUANCE OF SERVICE OF SECTION OFFICERS
AND DELEGATES

As there was no meeting of the Scientific Assembly of the Association in 1943, the section officers and delegates who were elected in 1942 have continued to serve in their respective capacities.

SESSIONS FOR GENERAL PRACTITIONERS

In 1941 the House of Delegates instructed the Council on Scientific Assembly to arrange meetings for general practitioners at the next annual session. Two Sessions on General Practice in the Section on Miscellaneous Topics were held at the Atlantic City session in 1942, and a similar arrangement has been made for the presentation of a program for general practitioners at the 1944 session.

MEETINGS OF THE COUNCIL AND CONFERENCE
OF SECTION SECRETARIES

The usual meetings of the Council have been held during the year covered by this report, and the annual Conference of Section Secretaries with the Council was held in Chicago on Dec. 1, 1943.

The Council has given official attention to such matters as have been presented and will hold official meetings that may be necessary during the Chicago session, and it is possible that a supplementary report will be submitted to the House of Delegates.

Respectfully submitted.

A. A. WALKER, Chairman.
J. GURNEY TAYLOR.
FREDERICK A. COLLIER.
CLYDE L. CUMMER.
EDWARD L. BORTZ.
HERMAN L. KRETSCHMER, President-Elect. }
MORRIS FISHBEIN, Editor, THE JOURNAL. } Ex officio.
OLIN WEST, Secretary. }

REPORT OF THE COUNCIL ON MEDICAL
SERVICE AND PUBLIC RELATIONS

To the members of the House of Delegates of the American Medical Association:

The Council on Medical Service and Public Relations, the newest of the Councils of the American Medical Association, was created by the House of Delegates in June 1943. The day after the House acted, the Board of Trustees appointed the following members:

Dr. Louis H. Bauer, Hempstead, N. Y.
Dr. Alfred W. Adson, Rochester, Minn.
Dr. John H. Fitzgibbon, Portland, Ore.
Dr. W. S. Leathers, Nashville, Tenn.
Dr. E. J. McCormick, Toledo, Ohio.
Dr. James R. McVay, Kansas City, Mo.

Dr. James E. Paullin, President of the Association, Brig. Gen. Fred W. Rankin, Past President, and Dr. Olin West, Secretary, were specified as members in the By-Laws setting up the Council. Dr. Roger I. Lee, Chairman of the Board of Trustees, was designated by the Board as its representative.

The Council met first on July 21, 1943 at Chicago and proceeded to organize. Dr. Bauer was elected Chairman, and Mr. J. W. Holloway Jr., Director of the Bureau of Legal Medicine and Legislation, was appointed acting Secretary of the Council. Committees were appointed to draw up a program and a budget and to select a permanent Secretary. Considerable time was spent in discussing the scope of work of the Council and numerous matters were given lengthy discussion.

The second meeting was held at Chicago on Sept. 9 and 10, 1943. A statement of general policies was adopted and referred to the Board of Trustees for approval. These policies are as follows:

1. The Council on Medical Service and Public Relations recognizes the desirability of widespread distribution of the benefits of medical science; it encourages evolution in the methods of administering medical care, subject to the basic principles necessary to the maintenance of scientific standards and the quality of the service rendered.

It is not in the public interest that the removal of economic barriers to medical science should be utilized as a subterfuge to overturn the whole order of medical practice. Removal of economic barriers should be an object in itself.

It is in the public interest that the standards of medical education be constantly raised, that medical research be constantly increased and that graduate and postgraduate medical education be energetically developed. Curative medicine, preventive medicine, public health medicine, research medicine and medical education, all are indispensable factors in promoting the health, comfort and happiness of the nation.

2. The Council through its executive committee and secretary shall analyze proposed legislation affecting medical service. Its officers are instructed to provide advice to the various state medical organizations as well as to legislative committees

concerning the effects of the proposed legislation. It shall likewise be the duty of its officers to offer constructive suggestions to bureaus and legislative committees on the subject of medical service.

3. The Council approves the principle of voluntary hospital insurance programs but disapproves the inclusion of medical services in those contracts for the reasons adopted by the House of Delegates at the 1943 meeting.

4. The Council approves voluntary prepayment medical service under the control of the state and county medical societies in accordance with the principles adopted by the House of Delegates in 1934 and later amended. The medical profession has always been very much opposed to compulsory health insurance because (1) it does not reach the unemployed class, (2) it results in a bureaucratic control of medicine and interposes a third party between the physician and the patient, (3) it results in mass medicine which is neither art nor science, (4) it is inordinately expensive, and (5) regulations, red tape and interference render good medical care impossible. Propaganda to the contrary notwithstanding, organized medicine in general, and the American Medical Association in particular, have never opposed group medicine, prepayment or nonprepayment, as such. The American Medical Association and the medical profession as a whole have opposed any scheme which on the face of it renders good medical care impossible. That group medicine has not been opposed as such is evidenced by the fact that there are many groups operating in the United States which have the approval of the medical profession, and members of these groups are and have been officials in the national and state medical organizations. That group medicine is the Utopia for the whole population, however, is not probable. It may be and possibly is the answer for certain communities and certain industrial groups if the medical groups are so organized and operated as to deliver good medical care.

5. The Council believes that many emergency measures now in force should cease following the end of hostilities.

6. The Council believes that the medical profession should attempt to establish the most cordial relationships possible with allied professions.

7. There is no official affiliation between the American Medical Association and the National Physicians Committee. However, since it is the purpose of the National Physicians Committee to enlighten the public concerning contributions which American medicine has made and is making in behalf of the individual and the nation as a whole, it is the opinion of the Council that the medical profession may well support the activities of the National Physicians Committee and other organizations of like aims.

8. American medicine and this Council owe a responsibility to our colleagues who are making personal sacrifices to answer the call of the armed forces. Therefore the Council expresses the desire to cooperate with the medical committee on postwar planning in order to assist our colleagues in reestablishing themselves in the practice of medicine and in the preservation of the American system of medicine.

The Council then considered its purposes and functioning and adopted a plan covering them. This plan was submitted to the Board of Trustees and was finally adopted at the meeting on Nov. 20, 1943. This plan is as follows:

ORGANIZATION

Officers.—The Council shall elect annually:

A chairman.

A vice chairman.

A full time secretary.

An executive committee of three shall be created, which include the Chairman, the Council member of the Board of Trustees and a third member to be chosen annually from the duly appointed or elected members of the Council on Medical Service and Public Relations. This committee shall exercise such functions as are delegated to it by the Council.

The central office of the Council is to be located in the office building of the American Medical Association in Chicago, Illinois.

The functions of the Council outlined in the By-Laws are closely integrated and cannot well be considered separately. To carry them out it is obvious that the Council must have

adequate sources of information, maintain close contact with constituent associations and component societies, and establish close relationship with the already existing bureaus and departments of the Association.

The Council, therefore, subject to the approval of the Board of Trustees, has decided on the following methods of operation:

1. In carrying out the directive in the By-Laws as to relationship with the other bureaus and departments of the Association, the Council has established close collaboration (a) with the Bureau of Medical Economics, which has been asked and has expressed the willingness to do the research on many of the economic problems necessary for the Council's study, and which is well equipped to carry out such research; (b) with the Bureau of Legal Medicine and Legislation; joint bulletins will be issued with that Bureau on legislative matters; attempt will be made to effect wider distribution and, if necessary, more frequent publications of such bulletins; (c) with the Bureau of Public Relations. The Council shall utilize the sources of information of this bureau, and joint bulletins may be issued from time to time with it and, if indicated, with other bureaus of the American Medical Association. All planning will be to avoid overlapping of functions and duplication of effort.

2. The Council on Medical Service and Public Relations has extended the sources of information of the American Medical Association on problems with which the Council is specifically concerned. Through its membership and by cooperation with constituent associations and component societies and the utilization of other facilities, the Council will disseminate such information toward effecting its objectives. The Secretary of the Council, with its approval, will undertake such travel as may be necessary.

3. In order that constituent associations and component societies may be kept informed of the activities of the Council and of proposed changes in the status of medical care, and that the Council may be of assistance to those associations and societies, the Council has requested each state association to designate an existing committee or create a new committee to function with the Council on the state level.

Each state organization has also been requested to contact each component society in the state and ask it similarly to designate or form a committee to function in connection with the programs of the Council. Where such organization is feasible, it has been suggested that committees be created along the lines of congressional districts.

Such state and county committees have been urged to keep the Council informed of their local problems and activities.

State organizations also will be requested from time to time to conduct experiments in the various methods of medical care and to inform the Council of their results so that the Council may study and evaluate the experiments and transmit the information acquired to all concerned.

4. The Council feels that under its directive it is its duty to endeavor to evolve such modifications of our present system of medical care as may be necessary to cover all the people and be in accord with the traditions of American medicine as to high standards of medical care and the American tradition of free enterprise as already outlined in paragraph 1 of the Council's Policies previously published. To accomplish this, study must be made of all economic, social and similar aspects of such care.

5. In order that the foregoing program may be effectively carried out, the Secretary of the Council, with the guidance of the Council in conformity with the herein expressed relationships with other bureaus and departments, shall inform the profession through the various state organizations of all pending national legislation and bureau directives affecting the practice of medicine. It shall likewise be his duty, with the guidance of the Council, to arrange for medical representation at meetings and hearings pertaining to medical care, collaborating in the representation with other councils and bureaus of the American Medical Association that have an interest in this same subject.

6. The Secretary is instructed with the supervision of the Council, and in collaboration with the Bureau of Public Relations, to disseminate information concerning the activities of

the Council through the publications of the American Medical Association and the various state medical journals, and to prepare and release information on medical care.

In accordance with this plan, Dr. E. J. McCormick was elected Vice Chairman of the Council, and an Executive Committee appointed consisting of the Chairman, the Trustee member, Dr. Lee, and Dr. Adson.

All state societies were circularized and asked to designate committees to work with the Council, and through them the county societies were asked to appoint like committees. Each local committee was asked to establish contacts with local lay organizations. They were requested to study and start a campaign of education on the Wagner-Murray-Dingell bill. Forty-four state societies designated committees. Two replied that they had no such committees, and two were not heard from. Five states sent in the lists of their county committees. Indiana reported at the Secretaries Conference and to the Council on an elaborate contact plan which it set up, and this was forwarded to all state societies for their information with the suggestion that they use such parts of the plan as were suited to their organizations and needs.

The Chairman was instructed to draw up a statement of the attitude of the Council on the Wagner-Murray-Dingell bill. In collaboration with Mr. Holloway, this was done. It was printed in *THE JOURNAL*, and reprints were forwarded to all state societies and editors of all state journals. Further requests for copies followed, and the statement had a wide distribution.

It was felt that the sources of information of the Association at Washington should be extended, and this was done.

At the November meeting it was decided to issue a semi-monthly Bulletin of information received, and this went into effect in January 1944. The Bulletin is sent to the members of the House of Delegates, all state secretaries, editors of state journals, state committees and county committees collaborating with the Council and to all others requesting it. At present the mailing list comprises approximately 2,000 names, and it is still growing. It is felt that these Bulletins are most useful to those actually engaged in the work of organized medicine.

The Bureau of Medical Economics prepared a survey of health insurance in all English speaking countries, and at the Council's request it brought up to date its 1940 Survey of Medical Service Plans.

A "Question and Answer Booklet on Sickness Insurance and the Wagner-Murray-Dingell Bill" was prepared jointly by the Council and the Bureau of Medical Economics, and it will be ready shortly for distribution. It is intended to have this available to all doctors for their personal information and, if they desire it, for their patients.

The attitude of the Council on compulsory sickness insurance is stated earlier in this report, and its attitude on the Wagner-Murray-Dingell bill is given in its statement on that bill. It is recommended that the House adopt these statements as its policy on the subjects involved.

Just prior to the November meeting the Council was able to obtain the services of Dr. G. Lombard Kelly, dean of the University of Georgia School of Medicine, as a full time secretary. Dr. Kelly is on leave of absence from the medical school until July 1. Dr. Kelly attended the November meeting and took over his post as Secretary on Jan. 1, 1944.

The Council owes a debt of gratitude to Mr. J. W. Holloway Jr., who acted as Secretary for six months. Mr. Holloway, Director of the Bureau of Legal Medicine and Legislation, was unusually busy with that Bureau, owing to one of his assistants being in the service, and yet he devoted a great deal of time and effort to the work of the Council.

The Council met again on Feb. 14 and 15, 1944 and at that time decided that it was advisable to open an office in Washington. Consequently the Board of Trustees was asked to appropriate funds for establishing in Washington, under the auspices of the Council, an office of medical economic research, this office to be charged with the collection of information and statistical data concerning medical care, its distribution, its availability, its costs and its control in various portions of the United States and that the information thus collected be made available to the medical profession through the publications of

the American Medical Association, to the Bureau of Medical Economics of the American Medical Association for its studies of this problem, and to other appropriate agencies interested in the extension of medical service and the provision of medical care and related subjects. The Board approved making a survey of the situation.

At the same meeting a conference was held with representatives of the National Conference on Medical Service.

Another conference was held with Dr. Martha Eliot of the Children's Bureau on the subject of the E. M. I. C. A verbatim report of this conference will have appeared in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* prior to the publication of this report.

Considerable study has been given to the subject of voluntary insurance, diagnostic clinics and medical service bureaus. The Council hopes to cover some of these subjects in a supplementary report.

The Council studied the status of medical students and feels that they should be brought into the fold of organized medicine as early as possible so that they may be inculcated with the ideals and ethics of medicine. Hence it recommends that the House direct the Board of Trustees to work out a plan whereby students in approved medical schools can become Student Members of the Association, and that the Board prepare the necessary changes in the Constitution and By-Laws, for submission to the House, in order to accomplish this.

The Council also has requested the Council on Medical Education and Hospitals to consider taking the necessary steps as soon as practicable to have each medical school give a course on medical sociology, medical economics and medical ethics.

It was decided that an official meeting of the Council be held in Washington in May and to devote one day of its meeting to a conference with invited representatives of other agencies concerned with medical care. A supplementary report will be made on this.

A budget was adopted at the February meeting and approved by the Board of Trustees.

Still other matters are under consideration by the Council, and it is hoped that a supplementary report can be made on at least some of them.

There has been close collaboration with the Bureau of Legal Medicine and Legislation on legislative matters besides the Wagner-Murray-Dingell bill, and that Bureau has issued legislative bulletins, in addition to the Bulletins of the Council.

The Council has had the complete cooperation of the Bureau of Medical Economics. That Bureau, like others, is at present understaffed but as soon as possible will be in a position to undertake more extensive surveys.

There is also close cooperation with the Bureau of Public Relations, and all sources of information are used jointly. It is planned to publish more frequent statements from the Council in *THE JOURNAL*.

Members of the Council and the Secretary have spoken frequently before state and county medical societies and lay organizations and have entered into debates and forums on the work of the Council and on the Wagner-Murray-Dingell bill.

One member of the Council was unable to attend its meetings because of urgent military duties, one member missed one meeting because of illness, and one member missed one meeting for another unavoidable reason. Otherwise all meetings of the Council have been fully attended.

A supplementary report will be submitted to the House of Delegates at a later time.

Respectfully submitted,

LOUIS H. BAUER, Chairman.
E. J. MCCORMICK, Vice Chairman.
ALFRED W. ADSON.
JOHN H. FITZGIBBON.
W. S. LEATHERS.
JAMES R. McVAY.
JAMES E. PAULLIN.
FRED W. RANKIN.
ROGER I. LEE.
OLIN WEST.
G. LOMBARD KELLY, Secretary.

Report of the War Participation Committee

To the Members of the House of Delegates of the American Medical Association:

The War Participation Committee of the American Medical Association originated from the report of the 1941-1942 Committee on Medical Preparedness to the 1942 House of Delegates. The latter committee suggested that it be discontinued and a new committee created for the purpose of keeping in close touch with all war related policies affecting the quality and efficiency of medical service both to the armed forces and to the civilian population.

Paced by Chairman Abell's A. M. A. Committee on Medical Preparedness, the forty-eight constituent state medical associations had served equally well their country's war needs through the instrumentality of similar committees.

The heavy responsibilities of the Procurement and Assignment Service, which in many states succeeded Medical Preparedness, as earlier known, have steadily become more complex, with doubled accent on the accessibility of adequate medical service to war industries, to thinly populated districts, to essential institutions and most recently on sufficient physicians to serve plans for a more rapidly expanding Army and Navy.

Since our committee's report to the 1943 House of Delegates two meetings have been held, one in July, the other in October, both in Washington, D. C., in order that we might confer on the second day with the Directing Board of Procurement and Assignment Service. The latter were definitely interested on both occasions in receiving advice and promise of cooperation in the pressing problem of meeting the omnipresent military and civilian service needs for doctors of medicine. In October we also met in joint session with Director Paul V. McNutt of the War Manpower Commission, representatives of the various Surgeons General, and of the national dental and nursing organizations. At this meeting considerable discussion was devoted to the obtaining of definite statements as to the stated needs of the armed forces for additional professional personnel as well as justification of the current use of such personnel in the armed forces.

The chairman of your War Participation Committee in November presented the functions of the committee as a coordinating agency before those in attendance on the annual conference of state medical association secretaries and editors held at A. M. A. headquarters in Chicago. At that time a request was again made for the creation of war participation committees by the various state medical associations rather than to continue the duties of such committees among the responsibilities of preexisting committees on medical preparedness or already harassed state committees on the Procurement and Assignment Service.

It is with regret that we report that up to the present time—two years after the creation of the original war participation committee—only twenty state associations have reported committees under such title. Nevertheless, our committee still holds the view that the personnel of various state association committees that have served for three years as members of a committee on Medical Preparedness or of a committee on Procurement and Assignment Service are quite likely to have their conception of their functions well consolidated and crystallized and not to respond too enthusiastically when the A. M. A. Committee on War Participation writes, asking for their cooperation throughout their respective states in such less pressing movements as (1) maintenance of war records of physicians in military service, (2) preservation of the local economic and professional interests of absent members and (3) preparing now to implement promptly at the conclusion of the war the plans currently being laid by the Committee on Postwar Medical Service of the American Medical Association and related organizations.

Such problems as these exist and will continue to develop in every state in the Union and may readily prove of equal importance to more academic discussions and planning, such as prompt cancellation of emergency measures that have involved (a) medical practice, (b) medical licensure and (c) medical education during the war period.

SHALL WE PERMIT THE PUBLIC TO FORGET?

We recently brought to the attention of each state association's war participation committee its responsibility to the membership absent in military service involved in keeping before the people of the state the fact that practically all physicians now in military service entered on a voluntary basis. It is undoubtedly true of some states—because of publicized emphasis on the difficulty in obtaining a desired quota of physicians for the more recent rapidly expanding military forces—that the public may have completely lost sight of the priceless voluntary feature of the military medical service rendered by 50,000 American physicians. It has been said that even line officers in military service are definitely under the impression that there is a special kind of "draft" for medical officers. The mere fact that the Procurement and Assignment Service has in the past twenty months been so directly connected with the War Manpower Commission may have helped to cause the average person to overlook the fact that the Procurement and Assignment Service has been and remains purely an advisory function. To give point and emphasis to this paragraph, we quote from a very earnest communication recently addressed to the chairman of the American Medical Association Committee on War Participation, which has made a deep impression on several:

"Now why should we [physicians] in the armed services be interested in having the people know that we are, in effect, volunteers and not draftees? Our story is not being told to the people. Perhaps before the end of the war the medical profession will have its whole future decided for it by political action by the people. This is as it should be—provided very definitely that the people have accurate impressions to guide them in their decisions. The minds of the people who shall have to decide about us one of these days will be conditioned to the truth about our war service. An enormous responsibility rests on the members of the American Medical Association to see to it that the people are told the story of what our contributions have been to this war. . . . Let us look to our security in the hearts of the people, never losing sight of the danger from demagoguery and clever publicity campaigns."

Our committee during the past year has on more occasions than one brought to the attention of each constituent state medical association the wartime problems involved in medical practice, medical licensure and medical education and the inherent organizational responsibilities connected with maintenance of war records and preservation of economic and professional interests of absent members. We have also brought to attention outstanding endeavors by the War Participation Committee in certain states to lighten the labors of the Procurement and Assignment Service and to anticipate community health needs likely to be related to prolongation of the hoped for shorter duration of the war.

We feel, therefore, that we have little additional to recommend to the membership of the Association through its House of Delegates than to stress the individual member's responsibilities to his fellow practitioners absent in military service and to remind each that he can best perform this home front responsibility by spreading truth regarding the wisest means of distributing medical service more widely while at the same time rendering the professional service that will best protect the health interests of all the people. Only by such means may we each help to develop the essential local reservoirs of public good will that the proposals of the politically minded will never succeed in draining off.

Respectfully submitted,

WALTER F. DONALDSON, Chairman.

EDWARD R. CUNNIFFE.

CLYDE L. CUMMER.

JOHN H. O'SHEA.

WILLIAM R. MOLONY SR.

JAMES E. PAULLIN.

HERMAN L. KRETSCHMER.

ROGER I. LEE.

MORRIS FISHBEN.

OLIN WEST.

} Ex officio.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Change in Health Officers.—Dr. Charles R. Blake, on account of ill health, has resigned as health officer of Richmond, a position he held since 1910; the resignation was effective April 1, the thirty-fourth anniversary of his appointment, newspapers reported.

Contest in Surgical Essays.—The San Francisco Surgical Society announces that its annual contest in the field of general surgery, open to young physicians in San Francisco and vicinity, again carries first and second prizes of \$150 and \$100, respectively. The contest was inaugurated last year, the competing essays to represent original work in the field of experimental or clinical surgery, but not necessarily based on an original idea. The closing date this year will be June 30. Additional information may be obtained from Dr. John W. Cline, secretary of the society, 490 Post Street, San Francisco 2.

Graduate Medical Education.—The San Francisco County Medical Society devoted its meeting April 12 to a symposium on graduate medical education. The following participated:

Dr. Arthur L. Bloomfield, San Francisco, Graduate Training for Returning Medical Officers.
Dr. Benjamin W. Black, superintendent of the Highland-Alameda County Hospital, Oakland, The Role of the Public Hospital in Graduate Medical Education.
Capt. Arthur H. Dearing (MC), and Lieut. Col. Russell H. Patterson, M. C., What Will the Returning Medical Officer Need?
Dr. Howard C. Naffziger, San Francisco, Future Needs in Graduate Medical Training.
Dr. Loren R. Chaudler, San Francisco, Methods of Providing Graduate Training in Medicine.

State Medical Meeting.—The California Medical Association will hold its annual meeting in Los Angeles, May 7-8, under the presidency of Dr. Karl L. Schaupp, San Francisco. One general meeting will be devoted to a symposium on amputations, in which the speakers will be Capt. John P. Owen (MC), Capt. Joseph M. Greer (MC), Lieut. Comdr. Gerald B. O'Connor (MC), Capt. Henry H. Kessler (MC) and Comdr. Douglas D. Toffelmier (MC). Among other speakers on the general program will be:

Dr. Alice Hamilton, Washington, D. C., New Problems in the Field of the Industrial Toxicologist.
Brig. Gen. Charles R. Glenn, M. C., Aviation Medicine, A Specialty in War and Peace.
Dr. Phil W. Shumaker, Beverly Hills, Angioneurotic Edema of Larynx.
Drs. Hildegarde R. J. Wilkinson and Charles M. Malone, Los Angeles, Single Caudal Block in Obstetrics for Analgesia and Delivery.
Drs. Samuel M. Martins and Jennie M. Howell, Los Angeles, The Antepartum Use of the Sulfonamides.
Dr. Herbert F. Traut, San Francisco, Exfoliation of Cells in Uterine Cancer: Its Importance in Diagnosis.
Dr. Thomas B. Dunn, Oakland, Practical Aspects of Tropical Medicine in America.
Comdr. Benjamin E. Konwaler (MC), Carbon Tetrachloride Poisoning.

The woman's auxiliary to the state medical association will also hold its convention in Los Angeles.

ILLINOIS

Dr. Black Donates Collection to State Society.—Dr. Carl E. Black, Jacksonville, who has been collecting photographs of physicians for a number of years, plans to present his collection to the Illinois State Medical Society to be placed in the care of the Illinois State Historical Society, Springfield. The collection will be given space in the centennial building, where the photographs will be easily accessible. The collection contains more than 3,000 photographs, of which more than 1,300 are of Illinois physicians. About 300 photographs are those of members of the "Fifty Year Club" of the state medical society. Dr. Black will have an exhibit of the "fifty year men" pictures at the Illinois State Medical Society meeting at the Palmer House, Chicago, May 17. Dr. Andy Hall, Mount Vernon, former director of the Illinois State Department of Public Health, recently gave 11 photographs of physicians in the Hall family to Dr. Black.

Chicago

Promotions at Northwestern.—Recent promotions on the faculty of Northwestern University Medical School include those of Dr. Henry R. Jacobs to assistant professor of medicine, Dr. Irving Punttenney to assistant professor of ophthalmology and Dr. Frederick R. Schmidt to assistant professor of dermatology.

Lecture Named for Richard Jaffé.—The first Richard H. Jaffé Lecture of the Institute of Medicine of Chicago, established recently under a fund in memory of Dr. Jaffé, pathologist at Cook County Hospital who died Dec. 17, 1937, will be delivered at the Palmer House, June 23, by Dr. William F. Petersen on "Organic Variability and Heart Disease."

Meeting on Nutrition.—The Chicago Nutrition Committee and a group of cooperating agencies devoted a meeting, April 11, to the theme "Improving Nutrition in Wartime Chicago." Among the speakers were:

Conrad A. Elvehjem, Ph.D., Madison, Wis., Nutrition—A Major Factor in Human Health.
Dr. Morris Fishbein, Editor, THE JOURNAL, Fads and Fallacies in Popular Nutrition Information.
Wilburn L. Wilson, War Food Administration, Washington, D. C., What Is Our Nutrition Goal?
Marjorie M. Heseltine, Children's Bureau, U. S. Department of Labor, What Can Health and Welfare Agencies Do to Improve Nutrition in Chicago?

At an evening session the speakers were Paul H. Appleby, Undersecretary, U. S. Department of Agriculture, "The World's Food Problem" and Dr. Edward J. Bigwood, Brussels, Belgium, "Food Problems in a Conquered Country."

MARYLAND

Borden Award Goes to Dr. McCollum.—Elmer V. McCollum, Ph.D., professor of biochemistry, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, since 1917, has been announced as the first recipient of the Borden Award given by the American Institute of Nutrition. The 1944 prize was given to Dr. McCollum "for his long years of pioneering research in nutrition. His contribution to our knowledge of the vitamin content of milk and of the high nutritive value of 'protective foods,' one of which is milk, have served as foundation stones for improving through foods the nutrition and health of the human race," it was reported (THE JOURNAL, Nov. 13, 1943, p. 715).

MISSISSIPPI

State Medical Meeting in Jackson.—The seventy-seventh annual session of the Mississippi State Medical Association will be held at the Robert E. Lee Hotel, Jackson, May 9-10, under the presidency of Dr. Ellis LeRoy Wilkins, Clarksdale. Among the out of state speakers will be:

Dr. Walter E. Wilkins, U. S. Public Health Service, Public Health Nutrition Problems.
Dr. Alonzo E. Hardison, Atlanta, Ga., Public Health Activities of American Red Cross in Mississippi.
Dr. W. Likely Simpson, Memphis, Tenn., Cancer of the Larynx.
Dr. Robert L. Sanders, Memphis, Subtotal Gastrectomy for Benign Lesions of the Stomach and Duodenum: Indications and Results.
Dr. Alton Ochsner, New Orleans, Incidence and Early Diagnosis of Carcinoma of the Lung.

The woman's auxiliary to the state association will meet at the Robert E. Lee Hotel, May 9-10, and the Mississippi State Hospital Association at the Heidelberg Hotel, May 8. Dr. John Darrington, Yazoo City, will deliver the Ewing Fox Howard Oration before the state medical association Tuesday evening on "Why the Medical Profession is a Great Profession."

NEW YORK

State Medical Meeting.—The Medical Society of the State of New York will convene in annual session at the Hotel Pennsylvania, New York, May 8-11, under the presidency of Dr. Thomas A. McGoldrick, Brooklyn. Out of state speakers will include:

Dr. Donald G. Anderson, Boston, Clinical Experience with Penicillin.
Dr. Lewis M. Hurxthal, Boston, Practical Management of Certain Endocrine Disorders.
Dr. James L. Poppen, Boston, Surgical Treatment of Hypertension.
Dr. Frank H. Lahey, Boston, Surgery of the Stomach and Duodenum.
Dr. Everett D. Kiefer, Boston, Diagnosis of Disorders of the Small and Large Intestine.
Dr. Robert A. Hingson Jr., Philadelphia, Continuous Caudal Analgesia.
Major Stevens J. Martin, M. C., Regional Anesthesia in the Army.
Dr. Sara M. Jordan, Boston, Medical Aspects of Recalcitrant and Complicated Ulcer.
Capt. Joseph E. Hamilton, M. C., War Wounds of the Colon and Rectum.
Drs. Eli Jefferson Browder, Brooklyn, and Robert Watson, Little Rock, Ark., Lesions of the Cervical Intervertebral Disk: Clinicopathologic Study of Twenty-Two Cases.
Dr. Lyman Burnham, Englewood, N. J., Vitamin C in Erythroblastosis Fetalis—Its Possible Role in Etiology and Prevention.
Major Charles E. Galloway, M. C., Diagnosis and Treatment of Lesions of the Uterine Cervix.
Dr. Virgil S. Counseller, Rochester, Minn., Vesicovaginal Fistula.
Capt. Rufus H. Aldredge, M. C., The Management of War Amputations in a General Hospital.
Dr. Harrison S. Martland, Newark, N. J., Medicolegal Systems—Actual and Ideal.
Dr. Hyman Green, Boston, Practical Experience with Congenital Heart Disease.
Dr. Arnold L. Gesell, New Haven, Conn., The Role of Development Diagnosis in Clinical Medicine.
Dr. Nathaniel Jones, Jacksonville, Fla., The Treatment of Early Syphilis with Fever and Mapharsen.

Mac F. Cahal, Dallas, Texas, The Role of the Hospital in Medical Care

Dr. Irvine H. Page, Indianapolis, Recent Advances in Etiology, Diagnosis and Treatment of Essential Hypertension.

Dr. Reginald H. Smithwick, Boston, Experience with the Surgical Treatment of Hypertension.

Dr. Samuel C. Harvey, New Haven, Conn., The Treatment of Infection with Particular Reference to the Peritoneum.

Dr. Henry R. O'Brien, Charlottesville, Va., History of Public Health in Cattaraugus, Chautauqua and Allegany Counties.

Dr. David M. Davis, Philadelphia, Intubated Uterotomy.

Dr. Edward L. Compere, Chicago, The Poliomyelitis Epidemic in Chicago in 1943.

Dr. Edward L. Howes, associate clinical professor of surgery, New York Post-Graduate Medical School and Hospital, Columbia University, New York, will present the sixth lecture under the A. Walter Suiter Lectureship, entitled "Recent Advances in Studying the Problems of Wound Healing and Their Effect on Treatment." Other groups meeting at this time include the woman's auxiliary to the state society, the New York State Association of School Physicians and the Women's Medical Society of New York State. A feature of the scientific exhibits this year will be a comprehensive exhibit on glaucoma, sponsored by the committee on glaucoma of the National Society for the Prevention of Blindness in cooperation with a number of ophthalmologists.

New York City

The Bela Schick Lecture.—Major Albert B. Sabin, M. C., associate professor of pediatrics, University of Cincinnati College of Medicine, will deliver the Bela Schick Lecture of Mount Sinai Hospital, May 2. His address will be on "Studies on the Natural History of Poliomyelitis."

Physician Named as First Chinese to Be Naturalized Since Repeal of Exclusion Act.—The first civilian Chinese to be naturalized in New York City since the Chinese exclusion acts were repealed last December renounced his British citizenship on April 11 and was sworn in as an American. The physician's name is Dr. Rupert C. Sancho and his speedy naturalization was possible, according to the *New York Times*, because he had made formal declaration in 1930 of his intention to obtain U. S. citizenship. The physician was permitted at that time to file his declaration in order to comply with New York State laws governing the practice of medicine. He had graduated at Howard University College of Medicine, Washington, D. C., in 1929 and began the practice of medicine in New York in 1930. He was born in Port of Spain, Trinidad.

Expansion in Tropical Medicine Continues.—The program on tropical medicine at Columbia University College of Physicians and Surgeons now includes a special eight weeks course offering a full time program in the various aspects of tropical medicine, attended by medical officers of the U. S. Navy as well as graduate students in public health. This phase is under the direction of the DeLamar Institute of Public Health, which is also assisting in expanding the teaching of parasitology and tropical medicine to the medical students. New additions to the faculty of the institute include Kathleen Hussey, Ph.D., and Gertrude Spremulli, Ph.D., both research associates in parasitology. Dr. Harold W. Brown is the first professor of parasitology in the new department of tropical medicine (*THE JOURNAL*, Nov. 6, 1943, p. 647), which was recently inaugurated at the school. Courses which recently have been made a part of the regular curriculum are on malariology, helminthology, protozoology, medical entomology, nutrition in relation to the tropics, tropical sanitation and hygiene, epidemiology, public health practice and specific problems of health and disease in the tropics.

NORTH DAKOTA

Personal.—Dr. Robert G. White, formerly of Valley City and Bismarck, has been named director of the Burke-Minot-Ward district public health unit with offices at Minot, succeeding the late Dr. Olaf O. Haraldson, Minot.

State Medical Meeting in Fargo.—The fifty-seventh annual meeting of the North Dakota State Medical Association will be held at the Elks Club, Fargo, May 7-9, under the presidency of Dr. Frank I. Darrow, Fargo. The house of delegates session will be held at Gardner Hotel. Among the speakers on the program will be:

Dr. William W. Bauer, Director, Bureau of Health Education, American Medical Association, Doctor Means Teacher.

Dr. Charles M. McLane, New York, Sterility.

Dr. Edward H. Skinner, Kansas City, Mo., Navigating the Medical Future.

Dr. Henry F. Helmholz, Rochester, Minn., Urinary Tract Infections in Childhood.

Dr. Lawrence R. Boies, Minneapolis, The Symptom of Headache.

Dr. Henry E. Michelson, Minneapolis, Common Disorders of the Skin.

Dr. Carl G. Morlock, Rochester, Indications for the Surgical Treatment of Peptic Ulcer.

Other groups meeting will include the North Dakota Health Officers' Association, North Dakota Academy of Ophthalmology and Otolaryngology, North Dakota Society of Obstetrics and Gynecology and North Dakota Radiological Society.

Public Health Program in Fargo.—On May 18 a group of representatives of the American Public Health Association will lecture at the Hotel Gardner, Fargo, presenting the following program:

Ellis S. Tisdale, sanitary engineer, U. S. Public Health Service, Looking Ahead in Public Health Engineering.

William Ford Higby, San Francisco, Voluntary Agencies and the Promotion of County Health Departments.

Dr. Charles E. Lyght, New York, Guiding Principles in a Health Education Program, the Fundamentals of Health Education and How to Make Them Practical.

Dr. Martha G. W. MacDonald, Washington, D. C., Mental Hygiene in the Child Health Conference.

Dr. Arthur Massey, Coventry, England (subject to be announced).

Dr. Reginald M. Atwater, New York, Highlights of the Changing Scene in Public Health.

Chauncey D. Leake, Ph.D., Galveston, Texas, Disease Control with Chemicals.

Miss Pearl McIver, senior public health nursing consultant, U. S. Public Health Service (subject to be announced).

The speakers will hold group discussions the following day, the program to conclude with a "round-up" with all speakers participating.

PENNSYLVANIA

Symposium on Electroencephalography.—"Principles and Practice of Clinical Electroencephalography" was the theme of a symposium in military medicine on April 26 in Aspinwall. Speakers discussing this phase were Dr. Yale D. Koskoff and S. Gutmacher, R.N., Pittsburgh. Other speakers included:

Major James W. Minter and Major Otis R. Farley, both in medical corps, Electroencephalogram in Inductees and Appointees.

Major Howard T. Fiedler, M. C., The Electroencephalogram in the Replacement Center.

Major Robert P. Kemble, M. C., The Electroencephalogram in the Military General Hospital.

Major Charles B. Huber, M. C., The Electroencephalogram in the Veterans' Hospital.

Philadelphia

The Samuel Gross Prize.—The Philadelphia Academy of Surgery announces that the Samuel D. Gross Prize of \$1,500 will be available this year. Competitive essays must be sent to the academy, care of the Philadelphia College of Physicians, 19 South 22d Street, Philadelphia, on or before Jan. 1, 1945. Bearing out the stipulations of the late Dr. Samuel D. Gross, the prize is awarded "every five years to the writer of the best original essay, not exceeding 150 pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice founded upon original investigations, the candidates for the prize to be American citizens."

Postgraduate Institute.—The ninth annual postgraduate Institute of the Philadelphia County Medical Society will be held at the Bellevue-Stratford Hotel, May 2-5, on the theme "Modern Diagnosis and Treatment." General topics of discussion will include suppurative diseases of the lungs, rehabilitation, postoperative pulmonary complications, postoperative circulatory complications, low back pain and psychosomatic aspects of gastroenterology. Among the speakers on the program will be:

Dr. Joseph Stokes Jr., Air Disinfection by Glycol Vapors and Ultraviolet Light.

Dr. Ella Roberts, Sulfonamide Prophylaxis in Rheumatic Fever.

Pauline B. Mack, Ph.D., State College, Pa., Nutritional Assessment of School Children.

Dr. Franklin R. Miller, The Leukemias.

Dr. Lowell A. Erf, Blood and Blood Plasma.

Dr. Charles E. Koop, Gelatin as a Plasma Substitute.

Dr. William L. White, Limitation in the Value of Local Sulfonamide Therapy.

Dr. Harold A. Zintel, Maintenance of Nutrition in Surgical Patients.

Dr. William G. Sawitz, Malaria.

Dr. George Morris Piersol, Rehabilitation and Its Relation to Physical Therapy.

Dr. Jonathan E. Rhoads, Demise of Tannic Acid Treatment of Burns.

TEXAS

New Class in Physical Therapy.—On March 27 the University of Texas Medical Branch, Galveston, opened a new class in physical therapy. Only a limited number of students are to be accepted. The facilities for training these students include a therapeutic pool and "whirlpool" for hydrotherapy, exercise equipment, and x-ray and ultraviolet ray equipment. The course calls for 1,315 hours of training. Students are enrolled for six months in anatomy classes together with medical students and study dissection, pathology, physiology, psychobiology and other medical courses. In addition they will study hydrotherapy, massage, electrotherapy and fever therapy, x-rays and the Kenny system.

State Program Held in Four Cities.—The State Medical Association of Texas, because of conditions imposed by the war, has divided its annual program so that one scientific section, public health, was held in Austin at the Driskill Hotel, April 19-20, and three scientific sections, medicine, pediatrics and eye, ear, nose and throat, in Fort Worth, Hotel Texas, April 20-21. The sections on surgery, obstetrics and gynecology, radiology and physical therapy and clinical pathology will meet at the Gunter Hotel, San Antonio, May 3-4, and the house of delegates will meet at the Hotel Adolphus, Dallas, May 10-11. The program lists the following out of state speakers:

Dr. Carl M. Peterson, Secretary, Council on Industrial Health, American Medical Association, Industry Needs the Physician.

Lieut. Col. Oza J. LaBarge, M. C., Virus Disease of the Respiratory Tract.

Major John S. Mikell, M. C., The Ear in Flying Personnel.

Major Thomas Brent Wayman, M. C., and Dr. Esther C. Marting, Cincinnati, A New Method of Treatment of Infiltrating Carcinoma of the Bladder.

Dr. Arthur Purdy Stout, New York, Tumors of Blood Vessels.

The annual Health Officers and Health Unit Directors Conference was held in Austin, April 18, and the Texas State Heart Association met in Fort Worth, April 20.

VIRGINIA

Venable Lectureship in Traumatic Surgery Created.—The Charles Scott Venable annual lectureship in traumatic surgery has been established in the University of Virginia Department of Medicine, Charlottesville. The lectureship will be supported by royalties from the sale of an adjustable splint designed by Dr. Charles Scott Venable Jr., San Antonio, Texas, president of the State Medical Association of Texas and also president of the American Association for the Surgery of Trauma. The splint has been made available without royalties or encumbrances to the Red Cross and civilian defense agencies. Dr. Venable's father was professor of mathematics at the University of Virginia from 1866 to 1896.

WYOMING

State Medical Meeting.—The regular annual meeting of the Wyoming State Medical Society will be held at Casper, May 28. No scientific session will be held. The program will include routine business and election of officers for the ensuing year.

HAWAII

Personal.—Stanley D. Porteus, D.Sc., director of the Hawaii Psychological Clinic, Honolulu, has been granted an eight months leave of absence to accept an invitation from Dr. Walter Freeman, professor of neurology, George Washington University School of Medicine, Washington, D. C., to collaborate in research on the brain operation known as prefrontal lobotomy, according to the Honolulu *Advertiser*, March 2.

GENERAL

Vitamin B Complex Award Goes to Dr. Hogan.—Albert G. Hogan, Ph.D., professor of animal nutrition and chairman of the department of agricultural chemistry, University of Missouri, Columbia, has been given the vitamin B complex award for 1944, presented by Mead Johnson & Company through the American Institute of Nutrition. The award went to Dr. Hogan in recognition of his pioneer work on certain aspects of the vitamin B complex. According to the citation, this work has progressed successfully for many years and has contributed materially to the modern knowledge of vitamin B.

Work on Enzymes Receives Lilly Award.—Joseph Stewart Fruton, Ph.D., of the Rockefeller Institute of Medical Research, New York, was presented with the Eli Lilly and Company Prize of \$1,000 for 1944 at the annual meeting of the American Chemical Society in Cleveland, April 5, in recognition of his "fundamental studies on the isolation, purification, mode of action and specificity of proteolytic enzymes of both plant and animal origin. The use of synthetic peptides as a tool in studying the specificity of enzymes was developed to a high degree and has afforded a new insight into the role of enzymes in the hydrolysis and synthesis of proteins."

Electron Microscope Used in Development of Penicillin.—The electron microscope is now being employed in advanced development of processes to help in the mass production of penicillin. Work is being pushed by chemists and bacteriologists in the research laboratories of Schenley Distillers Corporation, Lawrenceburg, Ind., whose converted whiskey distilling facilities have been devoted exclusively to producing industrial alcohol for smokeless gunpowder, synthetic rubber and other priority products. The instrument is expected to be of value in extending investigations of fermentation of war alcohol and studies of yeast, according to an announcement.

Laboratory Animals and Medical Research.—The Universities' Federation for Animal Welfare announces preparation of a book dealing with the care and handling of laboratory animals to be used in connection with medical research. Dr. Frances Jean Vinter, secretary of the federation, has asked THE JOURNAL to notify American research scientists to communicate with the federation, giving any information which they would like to see incorporated in such a book with respect to anesthesia, euthanasia, training and supervision of assistants in the animal department, sources of supply other than breeding, handling and taming and means of providing exercise for animals to keep them in good condition. Communications can be addressed direct to Dr. Vinter at the office of the federation, 284 Regent's Park Road, Finchley, London, N. 3.

Association for Thoracic Surgery.—The twenty-fifth annual meeting of the American Association for Thoracic Surgery will be held at the Drake Hotel, Chicago, May 5-6, under the presidency of Dr. Edward D. Churchill, Boston. Among the speakers on the program will be:

Col. Burr Noland Carter and Major Michael E. DeBakey, M. C., Current Observations on Thoracic Surgery in the Present War.

Major Brian B. Blades and Capt. David J. Dugan, M. C., War Wounds of the Chest Observed at the Thoracic Surgery Center.

Drs. Paul H. Holinger and Ralph G. Rigby, Bronchoscopic Cinematography of Bronchial Tumors.

Dr. Alfred Blalock, Baltimore, Resection of the Thymus for Myasthenia Gravis.

Dr. Jerome R. Head, Chicago, An Evaluation of Monaldi Suction Drainage in the Treatment of Tuberculous Pulmonary Cavities.

Dr. Herbert C. Maier, New York, Lobectomy in Pulmonary Tuberculosis.

Meeting of Industrial Physicians and Surgeons.—The fourth annual convention of the Western Association of Industrial Physicians and Surgeons will be held at the Biltmore Hotel, Los Angeles, May 6, under the presidency of Dr. Calvin A. Walker, San Francisco. Included among the speakers will be:

Dr. Rodney R. Beard, San Francisco, Medicine as Related to Aviation.

Douglass A. Campbell, Los Angeles, Why Not Complete the Job?

Dr. Wilbur Bailey, Los Angeles, The More Frequent Errors in Reading X-Ray Films.

Dr. Marion J. Dakin, Los Angeles, Eliminating Psychogenic Factors in the Management of Physical Problems of Women Workers.

Dr. Dudley A. Irwin, Pittsburgh, Industrial Dusts, Including the Prevention and Treatment of Silicosis by Aluminum.

Dr. Alice Hamilton, Washington, D. C., Toxicity of the Industrial Solvents.

Capt. Henry H. Kessler (MC), Orthopedic Rehabilitation of the Injured.

Dr. Max R. Burnell, Flint, Mich., Women in Industry.

Meetings on Tuberculosis.—The National Tuberculosis Association, the American Trudeau Society, the National Conference of Tuberculosis Secretaries, the Mississippi Valley Conference on Tuberculosis and the Southern Tuberculosis Conference will hold their annual meetings at the Stevens Hotel, Chicago, May 9-12. Speakers appearing on the joint program will include:

Drs. Charles Eugene Woodruff, Northville, Mich., and William L. Brosius, Detroit, Tubercle Bacilli in Sputum and Tissues as Related to the Allergic State of the Patient.

Dr. Herbert C. Maier, New York, Surgical Treatment of Tension Cavities in Pulmonary Tuberculosis.

Drs. Leo G. Rigler and George K. Higgins, Minneapolis, Roentgen Observations on Chronic Cor Pulmonale.

Drs. George W. Wright, Trudeau, N. Y., and William Warriner Woodruff, Saranac Lake, N. Y., Effect of Surgical Collapse Therapy on Pulmonary Function.

Herman E. Hilleboe, senior surgeon, U. S. Public Health Service, Mass X-Rays in the Control of Tuberculosis in the Civilian Population.

Association for Research in Ophthalmology.—The fourteenth annual meeting of the Association for Research in Ophthalmology will be held at the Hotel Sherman, Chicago, June 13. The speakers will include:

Dr. Kenneth C. Swan and Norman G. White, M.S., Iowa City, Iowa, Choline Esters with Mydriatic and Cycloplegic Action.

Dr. Hermann M. Burian and George Wald, Ph.D., Boston, The Dissociation of Form and Light Perception in Amblyopia ex Anopsia.

Louise L. Sloan, Ph.D., Randolph Field, Texas, A Quantitative Test for Measuring Degree of Red-Green Color Deficiency.

Dr. Isabella H. Perry, Dr. Charles Weiss and Marion C. Shervy, A. B., San Francisco, A Study of the Pathogenicity of Diphtheroid Bacilli Isolated from the Human Conjunctiva.

Dr. Charles W. Ascher, Cincinnati, Backflow Phenomena in Aqueous Veins of Normal and of Glaucomatous Eyes.

George K. Smelser, Ph.D., and V. Ozanics, New York, Effect of Chemotherapeutic Agents on Cell Division of the Intact and Regenerating Corneal Epithelium Following Burns and Abrasions in the Rat.

Major John G. Bellows, M. C., Evaluation of the Use of Penicillin in Military Ophthalmology.

Medical Bills in Congress.—*Change in Status.*—H. R. 4624 has been reported to the House of Representatives with the recommendation that it pass, a bill to consolidate and revise the laws relating to the Public Health Service. *Bills Introduced.*—S. 1851, introduced by Senator Thomas, Utah, and H. R. 4615, introduced by Representative Bulwinkle, North Carolina, are companion bills to establish a division of tuberculosis control in the United States Public Health Service. This legislation proposes an appropriation of \$10,000,000 for

the fiscal year ending June 30, 1945, and for each fiscal year thereafter a sum sufficient to carry out its purposes. The Surgeon General of the Public Health Service, with the approval of the Federal Security Administrator, will determine the total sum from the appropriations which will be available for allotment among the several states. S. 1858, introduced, by request, by Senator Clark, Missouri, proposes to give honorably discharged, disabled or retired marine employees of the Panama Canal civil service preference and to extend to them the facilities of the United States Public Health Service.

Association of American Physicians.—The fifty-eighth annual meeting of the Association of American Physicians will be held at the Claridge Hotel, Atlantic City, N. J., May 9, under the presidency of Dr. George Blumer, San Marino, Calif. Among the speakers will be:

Drs. George H. Whipple and Sidney C. Madden, Rochester, N. Y., Amino Acids and Plasma Protein Production

Drs. James L. Gamble and Allan M. Butler, Boston, Measurement of the Renal Water Requirement.

Drs. Marion A. Blankenhorn and Eugene B. Ferris Jr., Cincinnati, On the Nature of Aviators' Bends.

Col. John T. King, M. C., Pulmonary Embolism and Infarction in Apparently Healthy Officers, with Applied Phlebography.

Various aspects of penicillin will be presented by Drs. Chester S. Keefer, Boston, Alfred N. Richards, Philadelphia, Francis G. Blake, Branch Craige Jr., Nicholas A. Tieney, New Haven, Conn., and Joseph E. Moore, Baltimore. In addition the program includes representatives of the government services.

Society News.—The Society for Investigative Dermatology will meet at the Stevens Hotel, Chicago, June 13. It is also announced that the *Journal of Investigative Dermatology*, which was suspended in 1943, will resume publication at an early date. Dr. Samuel William Becker, secretary of the society, reports that after May 1 his address will be 55 East Washington Street, Chicago.—The American Diabetes Association will hold its fourth annual meeting at the Hotel Sherman, Chicago, June 11. Dr. Cecil Striker, Cincinnati, is the secretary.—The Association of Surgeons of the Southern Railway System will hold its annual meeting in Winston-Salem, N. C., May 30-31.—The tremendous transportation problem has made it necessary for the Pennsylvania Railroad management to ask the Pennsylvania Railroad Surgeons Association not to hold a meeting this fall.—The sixteenth annual convention of the Aero Medical Association of the United States will be held at the Jefferson Hotel, St. Louis, September 4-6. Dr. David S. Brachman, 5440 Cass Avenue, Detroit 2, is the secretary.

College of Physicians.—Dr. David P. Barr, New York, was chosen president-elect of the American College of Physicians at its war session in Chicago, March 31-April 1, and Dr. Ernest E. Irons, Chicago, was installed as president. Other officers include Drs. Charles H. Cocke, Asheville, N. C., Walter W. Palmer, New York, and James J. Waring, Denver, vice presidents. Dr. George M. Piersol, Philadelphia, is the secretary-general and E. R. Loveland, Philadelphia, executive secretary. The following speakers appeared on the program.

Major Gen. David N. W. Grant, M. C., Aerial Transportation of the Sick and Wounded.

Brig. Gen. Hugh J. Morgan, M. C. (opening remarks).

Lieut. Col. Thomas Fitz Hugh Jr., M. C., Experiences in India

Col. Alexander Marble, M. C., Recurrent Malaria in Soldiers Evacuated from Overseas.

Vice Admiral Ross T. McIntire, Surgeon General of the U. S. Navy.

The Great Need for Internists in the Navy Medical Program

Capt. Don S. Knowlton (MC), Medical Men in the Solomons

Capt. Albert M. Snell (MC), Medical Lessons Learned from the Evacuation of Casualties.

Dr. Francis G. Blake, New Haven, Conn., Scrub Typhus in New Guinea.

Association on Mental Deficiency.—The sixty-eighth annual meeting of the American Association on Mental Deficiency will be held at the Hotel Bellevue-Stratford, Philadelphia, May 11-15, under the presidency of Dr. Charles Stanley Raymond, Wrentham, Mass. Among the speakers on the program will be:

Edgar A. Doll, Ph.D., Milington, N. J., Suitability of Mental Defectives for Military Service

Dr. Robert H. Haskell, Northville, Mich., The American Movement in Mental Deficiency.

Dr. Fred O. Butler, Eldridge, Calif., A Quarter of a Century's Experience in Sterilization of Mental Defectives in California

Theodora M. Abel, Ph.D., Thiells, N. Y., Responses of Negro and White Morons to the Thematic Apperception Test

Wesley C. George, Ph.D., Chapel Hill, N. C., Some Anomalies of Development and Their Probable Relation to Mental Deficiency

Dr. Clemens E. Benda, Wrentham, Mass., The Familial Imbecile

Dr. Leslie J. Bone, Pennhurst, Pa., Incidence of Disease Among Mental Defectives

Dr. Ruth E. Duff, Elwyn, Pa., A Case of Adenoma Sebaceum

At a luncheon Thursday noon Arthur H. Estabrook, Ph.D., Philadelphia, will discuss "Postwar Problems in Mental Deficiency." At the president's dinner Friday evening Dr. Raymond will give his address on "Retrospect and Prospect in Mental Deficiency."

Meeting on Psychoanalysis and Psychosomatic Medicine.—The forty-sixth annual meeting of the American Psychoanalytic Association will be held at the Bellevue-Stratford Hotel, Philadelphia, May 13-15, under the presidency of Dr. Leo H. Bartemeier, Detroit. Among the speakers will be Dr. Harry Stack Sullivan, Washington, D. C., on "Notes on Theory and Practice from Twenty-Five Clinical Years." Lieut. Col. William C. Menninger, M. C., will be the guest speaker at the annual dinner Monday evening and Dr. Ernest Jones, London, England, president of the International Psychoanalytical Association, the guest of honor. On May 15 a joint meeting of the American Society for Research in Psychosomatic Problems will be held with the American Psychiatric Association with the following speakers: George St. John Perrott, principal statistician, U. S. Public Health Service, on "The Prevalence of Chronic Disease," Col. Leonard G. Rowntree, M. C., "Psychosomatic Disorders as Revealed by the Examination of 13 Million Registrants" and Drs. Helen Flanders Dunbar and Jacob A. Arlow, New York, "Criteria for Therapy in Psychosomatic Disorders." The meeting will also include a panel discussion by Major Gen. George B. Chisholm and Lieut. Col. John D. M. Griffin, R. C. A. M. C., Colonel Menninger and Charlotte Carr, Washington, assistant to the vice chairman, War Manpower Commission.

Million Dollars for Teaching and Research in Physical Medicine.—On April 26 the sum of \$1,100,000 was given by Bernard M. Baruch to be used for the teaching of and research into physical medicine. The money will be expended as follows:

The Columbia University College of Physicians and Surgeons, New York, \$400,000 for the establishment of a key center of research and teaching of physical medicine, with particular reference to its application for returning veterans. This sum is to be expended over a ten year period. This center is to give immediate assistance in maintaining an adequate supply of medical specialists to handle the problems of war and postwar physical rehabilitation.

To New York University College of Medicine, \$250,000 to be spent in ten years in establishing a center for teaching and special research in preventive and manipulative structural mechanics of physical medicine.

To Medical College of Virginia, Richmond (where the late Dr. Simon Baruch, father of Bernard Baruch, graduated in 1862), \$250,000 to be expended in ten years in establishing a center for teaching and research with particular reference to hydrology, climatology and spa therapy.

To selected medical schools, \$100,000 to develop an immediate program for the physical rehabilitation of war casualties and those injured in industry.

For the establishment of fellowships or residencies, \$100,000 to be used for the benefit of qualified physicians who are selected to be trained in this field.

The gift was announced after a survey had been completed by the Baruch Committee on Physical Medicine, which was formulated to study the field of physical medicine and determine its potentialities. In making the gift Mr. Baruch, under the guidance of the committee, asked that each of the centers provide itself with an adequate team of workers among whom will be a specialist in clinical physical medicine and an appropriately trained and interested laboratory scientist. It is expected that this team will coordinate all work of the centers and gather others in the institution so that an effective group will be developed. With the Baruch donations and the preparation of its final report, which will soon be available, the committee ceases to function. A scientific advisory committee is being formed and offices have been established at 597 Madison Avenue, New York, under the chairmanship of Dr. Frank Krusen, head of the section on physical medicine, Mayo Clinic, Rochester, Minn., and professor of physical medicine, University of Minnesota Graduate School, Minneapolis-Rochester. Miss Grace Keefe will be in immediate charge as executive secretary. Dr. Ray Lyman Wilbur, chancellor of Stanford University, will be chairman of an administrative committee composed of Dr. Krusen and Miss Mary A. Boyle, a long time associate of Mr. Baruch. The actual survey into the field of physical medicine was begun Nov. 1, 1943 and was completed by February 1. The cost of the preliminary work has been defrayed by Mr. Baruch. Results of the committee disclosed three primary needs for the proper development of physical medicine:

An adequate supply of physicians who could teach physical medicine. More basic research in physical medicine, including establishment of centers to promote carefully checked scientific research on commonly accepted nonmedical procedures, including those for which claims have been made by practitioners of osteopathy, chiropractic and such.

Proper usage of physical medicine in relation to wartime rehabilitation.

Mr. Baruch's interest in the field of physical medicine stemmed from the interest of his father, who had been professor of hydrotherapy at Columbia University College of Physicians and Surgeons.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 25, 1944.

The National Health Service

The White Paper declaring the intention of the government to establish a comprehensive national health service has at last come before Parliament. In the House of Lords the minister of reconstruction, Lord Woolton, moved a resolution welcoming this intention. He said that if the outline of the government's policy obtained the general approval of Parliament the ministers would enter into consultation with local authorities, voluntary hospitals and the several branches of the medical profession in order to arrive at agreement and hammer out the legislative details. Lord Moran, president of the Royal College of Physicians, moved an amendment to add to the motion the words "but regrets the absence of detail on many important matters, in particular on the consultant service." They could all commend the purpose of the White Paper, Lord Moran said; the aims had been advocated for many years by the profession itself, but what mattered was the means taken to achieve them. When discussions were opened with the minister of health, he recalled, members of the committee representing the profession asked that the Central Council be made a statutory body. That was conceded. But two more important assurances were asked for: that the council should be allowed to publish its own proceedings and that it should be elected by the profession and not nominated by the minister. The representatives were under the impression that the safeguards were conceded, but they did not appear in the White Paper. At the meetings, Lord Moran said, he was impressed by the general desire of all sections of the profession to find some alternative to the Ministry of Health to guide their destinies. This was not a healthy sign, he felt. The powers of the Central Medical Board to direct entrants to the profession were unusual. This would be called conscription in peacetime. Another result, he predicted, would be that the great majority of the profession would be removed from a life where the rewards were largely conditioned by success in practice into a service where the reward would have little relation to their success; thus there would be little incentive to competence. The changes foreshadowed seemed to Lord Moran to strike at the general practitioner as an individual.

Lord Dawson, president of the British Medical Association, said that some of the proposals in the White Paper gave him pleasure; others gave him concern. The scheme tried to go too far, Lord Dawson felt. The sensible thing would have been to take the foundations first and leave the superstructure for later, to be built in the light of experience. Why the enthusiasm, he asked, to push the health center for the purpose of group practice? It was a way, he thought, of insidiously introducing the principle of whole time salaried service. The only way the government could possibly administer a large profession was to put at the right hand of every administrative body a vocational body to advise and guide its policy. Once the profession came under the control of the civil service, would it be "goodbye to the best that medicine could do?" In the White Paper there cropped up too often what had been described as "the new despotism." The minister had powers to override everything. Lord Dawson emphasized the supreme necessity of private practice. The profession wanted the comprehensive service it had always advocated, he concluded, but it also wanted to preserve its great traditions and hand down its freedom to the generations to come.

In the House of Commons the minister of health, Mr. Willink, said that the national health service was one of the main pillars on which our postwar structure should rest and that it represented the biggest advance ever made in this country in the sphere of public health. There were four main principles, Mr. Willink said. The first was comprehensiveness; the service must be available to all, starting with the family doctor and ranging through the clinic to the consultant and hospital services. The second principle was freedom. No one, patient or doctor, must be coerced into this service. The third was democratic responsibility. The fourth was professional and vocational guidance. The ultimate responsibility must be fully democratic, Mr. Willink said, but the service must benefit throughout by the best expert professional guidance. There would be no regimentation of the medical profession, he added.

Sir Ernest Graham-Little, dermatologist, said that over 90 per cent of the medical profession were against any lay control of it, and that it was impossible to work any scheme if those who operated it were intensely resentful of the conditions imposed on them. Two physicians who are members of the labor party approved of the scheme and challenged Graham-Little's claim to represent a large part of the profession. He replied that those opposed to his views amounted to less than 10 per cent of the profession. It may be added that these dissenters belong almost entirely to the labor or socialist party. So also the lay members of Parliament of the labor party strongly support the scheme and desire that the physicians who will work it should be whole time state employees. The members of other parties in the House of Commons, while welcoming the scheme, criticized details such as control of the voluntary hospitals.

The British Medical Association has sent to all members of the medical profession, whether members of the association or not, (1) a copy of the White Paper, (2) an analysis of the principles approved by the association and (3) a questionnaire prepared by an expert lay body, the British Institute of Public Opinion. The questionnaire is elaborate and includes thirty items covering all the issues which have been or can be raised. The following are examples: "Should the national health service be confined to 90 per cent of the public, excluding the 10 per cent of the upper income group?" "Should complete hospital and specialist services be available to every one in a general ward?" "The profession rejects any proposal for control of the service by local authorities as at present constituted. Do you consider that the White Paper observes or infringes this principle?" Meetings of the profession to discuss the White Paper are to be held. Doctors are asked to attend the meeting in their district before filling in the questionnaire.

Danger of Closure of Hospital Because of Domestic Help Shortage

One of the consequences of the war is the shortage of all kinds of labor. This is particularly felt in the domestic sphere, where helpers are often unobtainable. Hospitals have to carry on with depleted medical staffs, but now an acute difficulty has arisen in domestic work. The chairman of St. Mark's Hospital for Diseases of the Rectum has written to the *Times* that this hospital, the principal one for these diseases in the British Empire, with a worldwide reputation, is in grave danger of having to close its doors before the end of this month. The reason is shortage of domestic personnel. No hospital can continue without a cook. No cook will stay without kitchen assistants. Every effort has been made to obtain these. Appeals have been made to the Ministry of Labor and the Ministry of Health without result, so as a last resort this cry for help in the *Times* has been made.

Deaths

Roscoe Hamilton Beeson, Muncie, Ind.; University of Louisville (Ky.) School of Medicine, 1918; member of the Indiana State Medical Association; fellow of the American College of Physicians and governor from 1928 to 1933; specialist certified by the American Board of Internal Medicine; past president of the Muncie Academy of Medicine and the Eighth Councilor District Medical Society; served during World War I; on the staff of the Ball Memorial Hospital, where he died March 30, aged 53, of diabetes mellitus.

Henry Brodman © New York; Cornell University Medical College, New York, 1901; on the staff of the Beth Israel Hospital; died recently, aged 67, of coronary thrombosis.

Lucius M. Elsinger, Scranton, Pa.; Jefferson Medical College of Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania; formerly city bacteriologist, and police and fire surgeon; served as head of the medical branch of the civilian defense unit in the West Scranton area; for many years a member of the staff of Scranton State Hospital; consultant at St. Mary's Hospital; on the staff of the Mercy Hospital, where he died February 9, aged 58, of pneumonia.

Sigfred Engh, Jackson, Minn.; University of Minnesota Medical School, Minneapolis, 1914; member of the Minnesota State Medical Association; served in France during World War I; died recently, aged 57, of cerebral hemorrhage.

John D. Ferguson, Ava, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1913; served during World War I; formerly mayor of Ava; died January 30, aged 66, of heart disease.

Charles Carroll Fishburne, Darien, Ga.; Atlanta Medical College, 1914; member of the Medical Association of Georgia; served as a captain in the medical corps of the U. S. Army during World War I; died in Jacksonville, Fla., February 3, aged 58, of uremia.

Cornelius Aultman Frame, Le Roy, N. Y.; Jefferson Medical College of Philadelphia, 1889; died January 17, aged 82, of arteriosclerotic heart disease and aneurysm of the abdominal aorta.

Cary Dennie Frederick, Los Angeles; Meharry Medical College, Nashville, Tenn., 1905; died January 30, aged 64, of myocarditis and arteriosclerosis.

Charles S. Goar, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1888; member of the Indiana State Medical Association; at one time state senator; died February 4, aged 78, of myocardial degeneration and asthma.

Karl Lowenthal, Fall River, Mass.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1915; member of the Massachusetts Medical Society; chief of laboratory, Union Hospital and the Newport (R. I.) Hospital; died in the New England Deaconess Hospital, Boston, January 15, aged 51, of cerebral thrombosis and hypertensive cardiovascular disease.

George B. McGraw, Pawtucket, R. I.; Albany Medical College, Albany, N. Y., 1894; member of the Rhode Island Medical Society; died February 4, aged 77, of cerebral hemorrhage and hypertensive cardiovascular disease.

Carl Deloss Meacham © Greene, N. Y.; Syracuse University College of Medicine, 1910; coroner of Chenango County; member of the Greene Rotary Club; died February 16, aged 57, of coronary occlusion.

John Bernard Menkhaus, University City, Mo.; Beaumont Hospital Medical College, St. Louis, 1898; died in St. John's Hospital, St. Louis, January 1, aged 74, of arteriosclerosis.

Henry King Miller, Fairland, Okla.; Barnes Medical College, St. Louis, 1906; member of the Oklahoma State Medical Association; died in the Miami Baptist Hospital, Miami, February 1, aged 67, of coronary occlusion.

Asa White Nickell © Louisville, Ky.; Kentucky School of Medicine, Louisville, 1896; formerly associate professor of anatomy and gynecology at his alma mater; on the staff of

SS Mary and Elizabeth Hospital; died February 15, aged 71, of coronary occlusion.

Patrick Henry O'Malley, Madison, Wis.; Rush Medical College, Chicago, 1901; died in a local hospital February 17, aged 71, of arteriosclerotic heart disease.

George Riddle Patrick, Bessemer City, N. C.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916; member of the Medical Society of the State of North Carolina; served during World War I; on the staff of the City Hospital, Gastonia, where he died February 5, aged 53, of coronary thrombosis.

Walter May Peck, Dallas, Texas; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; formerly professor of medicine at Baylor University College of Medicine; died February 5, aged 66, of coronary disease.

James A. Pinkston, Independence, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1902; member of the Kansas Medical Society; died January 25, aged 82, of diabetes mellitus.

Paul Joseph Piper, Pittsburgh; Georgetown University School of Medicine, Washington, D. C., 1939; on the staffs of the Veterans Administration facilities in Dearborn, Mich., and Aspinwall, Pa.; died in the Henry Ford Hospital, Detroit, February 21, aged 30, of liver abscess.

Charles Elbert Robb, Rock Island, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; member of the Illinois State Medical Society; past president and vice president of the Iowa and Illinois Central District Medical Society; past president of the Rock Island County Medical Society; served during World War I; a member and past president of the staff, St. Anthony Hospital; died February 27, aged 62, of coronary occlusion.

Joseph Franklin Roberts, Bolivar, Mo.; Missouri Medical College, St. Louis, 1877; member of the Missouri State Medical Association; past president and for many years secretary of the Polk County Medical Society, now known as the Dallas-Hickory-Polk County Medical Society, of which he was also past president; died in the Springfield Baptist Hospital, Springfield, February 10, aged 93.

Frederick Crosby Rumsey © Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, 1909; clinical assistant in medicine at his alma mater from Oct. 1, 1914 to September 1925; on the staffs of St. Luke's Hospital and St. Mary's Hospital, where he died February 1, aged 63, of pneumococcal pneumonia and coronary artery disease.

Isadore Sarnoff, Chicago; Jenner Medical College, Chicago, 1910; for many years physician and surgeon for the city police department; died in the Swedish Covenant Hospital February 26, aged 64, of injuries received when struck by an automobile.

Charles W. Tinker, Stewart, Minn.; Jefferson Medical College of Philadelphia, 1878; member of the Minnesota State Medical Association; died in the Vendome Hotel, Minneapolis, recently, aged 86, of angina pectoris.

Harry A. Walsh, Philadelphia; Jefferson Medical College of Philadelphia, 1921; member of the Medical Society of the State of Pennsylvania; died recently, aged 60.

KILLED IN ACTION

Jean Herold Wolfs, Glen Ridge, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1940; diplomate of the National Board of Medical Examiners; served an internship at the Kings County Hospital, Brooklyn; commissioned a lieutenant (jg), medical corps, U. S. Naval Reserve, in July 1942; served at Newport, R. I., and with amphibious forces at Little Creek, Va.; went overseas in March 1943 as medical officer on LCT; later promoted to lieutenant; died in action at Anzio-Nettuno beachhead, February 26, aged 28.



LIEUT. JEAN H. WOLFS (MC),
U.S.N.R., 1915-1944

Correspondence

HISTORY OF MEDICINE

To the Editor:—In *THE JOURNAL*, March 18, appears an editorial entitled "Andreas Vesalius and Harvey Cushing: Tradition and Inspiration," from which I quote the following extract and which I believe, because the Association itself is approaching its centennial, is timely and worth repeating.

Many of the greatest medical men have been historically minded. American activity in the history of medicine compares well with similar scholarship elsewhere. An enthusiastic group of physicians have supported it with both international and local studies, receiving loyal aid from capable bibliographers and collectors of medical literature. Nor should those publishers be forgotten who, time and time again, took risks in order to stand by the traditions which history and biography try to maintain.

The American Medical Association has no section devoted to medical history, as does the Canadian Medical Association and the British. When the American and Canadian associations held their joint session as I recall in 1937, because our Canadian associates had this cultural group, a special section was created for medical history at this meeting, and a resolution was sponsored recommending that the Board of Trustees of the American Medical Association create a section in our association for this purpose.

I believe that there is enough interest in this subject to support such a section. The field is broad and through lack of our initiative so much slight of hand medical history goes in the air over the radio, and through the lay press, that a more healthy view of the subject would result if trained physicians, not laymen, should weigh and evaluate the fine and valuable experience of the past with the ever changing trends of a living and continually advancing science.

I have no influence with the House of Delegates, but I hope that you will publish this letter, as I am sure there are others interested in your comments, and, further, that some movement may result toward the creation of such a section in the American Medical Association, and that the subject may be at least considered at the June meeting.

R. C. HOLCOMB, M.D., Upper Darby, Pa.

POSTURE DURING EXAMINATION OF RAPID HEART

To the Editor:—The clinical note "Posture During Examination of Rapid Heart," by Dr. L. S. Luton (*THE JOURNAL*, Nov. 13, 1943) suggests the following observations:

As the author states, the practice of having a patient take a deep inspiration and then bend forward at an angle of 90 degrees has been employed for some time as one of the many methods used in arresting paroxysmal tachycardia. Prior to my entry into the service I had occasion to examine a considerable number of applicants for employment in industries where exposure to nitrites was a hazard. It was essential to exclude individuals with very unstable vasomotor systems from this type of work. When applicants with a very rapid heart rate were encountered, this posture test was used in an attempt to slow the rate and facilitate examination.

It was observed that the test worked very well for persons of the vagotonic type who also showed wide fluctuations in systolic pressure as well as heart rate. These patients were usually of the intellectual type, and questioning often elicited neurotic tendencies. The unstable vasomotor systems of this

group naturally made them poor candidates for this type of employment and they were excluded. On the other hand, a large group were encountered on which this test had no effect on slowing the rate. Rates up to 150 were frequently found. They were usually of the robust nonintellectual type and were simply scared to death of the doctor's office. They exhibited no other signs of vasomotor instability and usually quieted down after reassurance. In spite of their rapid rate, these persons were considered good candidates for employment.

JOHN T. LARKIN, Major, M. C., A. U. S.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, April 22, page 1220.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, September 5. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARKANSAS: * *Eclectic*. Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: San Francisco, June 27-29. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

CONNECTICUT: * *Written*. New Haven, July 11-12. *Endorsement*. New Haven, July 25. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic*. Derby, July 11-12. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, Oct. 10-12. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

HAWAII: Honolulu, July 10-13. Sec., Dr. J. A. Morgan, 55 Young Bldg., Honolulu.

IDAHO: Boise, July 11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

IOWA: * Iowa City, Sept. 25-27. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: November. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville.

MARYLAND: *Medical*. Baltimore, June 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*. Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 11-14. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 F State House, Boston.

MICHIGAN: * Ann Arbor, July. Sec., Board of Registration in Medicine, Dr. J. E. McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: * Minneapolis, April 18-20. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, May 29-30. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEVADA: Carson City, May 1. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, September. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement*. Columbus, July 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * Portland, July. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandena St., Columbia.

VERMONT: Burlington, Sept. 12-14. Sec., Dr. F. J. Lawliss, Richford.

WEST VIRGINIA: Charleston, May 1-3. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston.

WISCONSIN: * Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: Cheyenne, June 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, June 7-8 Sec., Dr. E. B. Starks, 1459 Ogden St., Denver.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, July 11. Dir., Division of Licensure and Registration Mr. H. W. Greife, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 12-13. Sec., Miss Eloise LeBeru, 101 N. Walnut St., Lansing.

NEBRASKA: Omaha, May 23. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Santa Fe, June 12. Sec., Miss Marian M. Rhea, State Capitol Bldg., Santa Fe.

OKLAHOMA: Oklahoma City, July 3. Sec., Dr. J. D. Osborn Jr., Frederick.

OREGON: Corvallis, July 8. Final date for filing application is June 21. Sec., Board of Higher Education, Mr. C. D. Byrne, Eugene.

RHODE ISLAND: Providence, May 17. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Nashville and Memphis, June 23-24. Sec., Dr. O. W. Hyman, Memphis.

WISCONSIN: Milwaukee, June 3. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Unlicensed Practice of Medicine by Chiropractor.—A complaint was filed against Minnie Black, who was licensed to practice chiropractic only in New Jersey, charging that she violated "Section 45:9-22 of Title 45 of the Revised Statutes [the section of the medical practice act of New Jersey prohibiting the practice of medicine except by a person licensed to do so and providing a penalty for a violation of the prohibition] without first having obtained and filed a license for such practice issued by the State Board of Medical Examiners." She was convicted and instituted certiorari proceedings in the supreme court of New Jersey.

Obviously, said the supreme court, the statement of conduct constituting the alleged violation of the medical practice act on the part of the chiropractor was in some way omitted. However, no point was made of this in the trial court, and no point is made of it now, and we construe the complaint as charging that the chiropractor, in the language of the section, either commenced or continued the practice of medicine without first having obtained the required license.

The chiropractor argued that there was no evidence before the trial court to show that she had practiced medicine since the witnesses who testified to having consulted her with regard to ailments were not suffering from any such ailments and visited her merely for the purpose of obtaining evidence on which to institute suit. Be this as it may, said the court, the witnesses stated conditions for which they desired treatment and that treatment was accorded. Thus, in our opinion, clearly indicates that the chiropractor did in the particular cases practice medicine in the sense intended by the medical practice act.

The chiropractor next contended that the language of the section of the medical practice act defining the practice of medicine and prohibiting such practice except by a licensed person is so broad as necessarily to cover a mere casual suggestion by A to B that, for example, bicarbonate of soda is good for an acid condition of the stomach and that, even though the situation did not exist, still because it might conceivably exist, the whole act is vitiated. To this contention, said the court, we think there are two sufficient answers. The first is that as a matter of reasonable construction the whole act relates to the practice of medicine, normally for financial reward, and in no way to casual recommendations between relatives and friends; and the second is that, even giving the act the broad construction contended for, it is within the power of the legislature constitutionally to say even that such casual recommendations are unlawful.

The judgment of conviction was affirmed.—*Black v. McMahon*, Judge, 32 A. (2d) 716 (N. J., 1943).

Society Proceedings

COMING MEETINGS

American Medical Association, Chicago, June 12-16. Dr. Olin West, 535 N. Dearborn St., Chicago 10, Secretary.

American Association for the Surgery of Trauma, Chicago, June 9-10. Dr. Gordon M. Morrison, 320 Commonwealth Ave., Boston, Secretary.

American Association for Thoracic Surgery, Chicago, May 5-6. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis 15, Tenn., Secretary.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 8-10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Figg, 102 Second Ave., S.W., Rochester, Minn., Secretary.

American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.

American York, June 6. Dr. Secretary.

American 11. Dr. Fred W. Secretary.

American (. 2, Secretary.

Holinger 10-12 Dr. Paul H. Secretary.

American Mr. Mac F. Cahal, Secretary.

American Diabetes Association, Chicago, June 11. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.

American Federation for Clinical Research, Chicago, June 12-13. Dr. Thomas M. Durant, 3401 N. Broad St., Philadelphia 40, Secretary.

American Gastroenterological Association, Chicago, June 12-13. Dr. J. Arnold Bergen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Laryngological Association, New York, June 7-8. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.

American Laryngological, Rhinological and Otolological Society, New York, June 9-10. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Chicago, June 10-11. Dr. Carroll L. Birch, 2045 Sedgwick St., Chicago, Secretary.

American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.

American Ophthalmological Society, Hot Springs, Va., May 29-31. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Physicians' Art Association, Chicago, June 12-16. Dr. F. H. Redewill, 536 Flood Bldg., San Francisco, Secretary.

American Proctologic Society, Chicago, June 11-15. Dr. W. H. Daniel, 1930 Wilshire Blvd., Los Angeles 5, Secretary.

American Psychiatric Association, Philadelphia, May 15-18. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.

American Psychoanalytic Association, Philadelphia, May 13-15. Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.

American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.

American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St. N., Fargo, N. D., Secretary.

Association for Chicago, June 13. Dr. B. F. Secretary.

Payne, School Field, Texas, Secretary.

Association for the Study of Internal Secretions, Chicago, June 12-13. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, Secretary.

Association of American Physicians, Atlantic City, May 9. Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.

California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.

Connecticut State Medical Society, Bridgeport, May 24. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Georgia Medical Association of Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Hawaiian Territorial Medical Association, Honolulu, May 5-6. Dr. A. V. Molyneux, 1133 Punchbowl St., Honolulu, Secretary.

Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.

Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.

Mississippi State Medical Association, Jackson, May 9-10. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.

National Tuberculosis Association, Chicago, May 10-12. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.

Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 16. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.

New York Medical Society of the State of New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.

North Carolina Medical Society of the State of Pinehurst, May 1-3. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.

North Dakota State Medical Association, Fargo, May 7-9. Dr. L. W. Larson, 221 5th Street, Bismarck, Secretary.

Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.

Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.

Society for Investigative Dermatology, Chicago, June 13. Dr. S. W. Becker, 55 E. Washington St., Chicago, Secretary.

Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazer, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

South Dakota State Medical Association, Huron, May 21-23. Dr. Roland G. Mayer, 225 S. Main St., Aberdeen, Secretary.

Texas State Medical Association of Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.

West Virginia Medical Association, Wheeling, May 15-16. Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Wyoming State Medical Society, Casper, May 28. Dr. M. C. Keith, Capitol Building, Cheyenne, Secretary.

Current Medical Literature**AMERICAN**

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Orthodontics and Oral Surgery, St. Louis

30:1-64; and 1-56 (Jan.) 1944. Partial Index

Orthodontics

- Present Day Lingual Arch Therapy. J. W. Ross.—p. 1.
Treatment of Case Using Johnson Twin Arch Technic. W. J. Prezzano.—p. 21.
New Method of Treating Unilateral Posterior Occlusion, Class II, Division 1, Subdivision. Josephine M. Ahelson.—p. 31.
Diet and Teeth. K. A. Eastlick.—p. 40.

Oral Surgery

- *Penicillin in Treatment of Cellulitis of Mouth. W. E. Herrell and D. R. Nichols.—p. 1.
Use of Higher Than Usual Concentrations of Procaine Hydrochloride in Dentistry. S. A. Lovstedt.—p. 8.
Cysts Arising from Mucosa of Maxillary Sinus as Seen in Dental Roentgenogram. J. A. Millhon and H. A. Brown.—p. 12.
Cysts of Jaws Lined with Ciliated Columnar Epithelium. S. A. Lovstedt.—p. 16.
Cystic Odontoma: Report of Case. E. C. Stafne.—p. 23.
Basal Metabolic Rates and Dental Caries. L. T. Austin.—p. 50.

Penicillin in Cellulitis of Mouth.—Herrell and Nichols used penicillin in the form either of the sodium salt or of the calcium salt in 6 cases of extensive cellulitis of the floor of the mouth. In 2 cases the cellulitis was complicated by bacteremia. The use of penicillin did not produce toxic reactions. The extensive cellulitis responded almost dramatically to the use of penicillin. If subsequent studies show that penicillin therapy will accomplish satisfactory results in such cases, it may be possible to avoid extensive and radical surgical procedures. The use of penicillin may shorten the period of convalescence and reduce the hazard of complications associated with cellulitis of the mouth.

Basal Metabolic Rates and Dental Caries.—Austin reports that during the physical examination at the Mayo Clinic of a group of nurses a dental examination with dental roentgenograms was included, as well as a determination of the basal metabolic rate. The incidence of caries was progressively greater as the basal metabolic rate decreased. These studies were repeated on several incoming classes of nurses, and the same tendency was discovered in all groups. The number of patients is still too small to permit definite conclusions; yet the evidence that a relationship does exist between these conditions is sufficient to justify further studies.

American Journal of Pathology, Ann Arbor, Mich.

20:1-216 (Jan.) 1944

- Transplantable Osteogenic Sarcomas Induced in Rats by Feeding Radium. C. E. Dunlap, J. C. Aub, R. D. Evans and R. S. Harris.—p. 1.
Adamantoblastomas in Slye Stock of Mice. E. V. Zegarelli.—p. 23.
Experimental Thrombotic Bacterial (Streptococcus Viridans) Endocarditis: I. Its Production and Incidence in Rabbit. L. Loewe, P. Rosenblatt and M. Lederer.—p. 89.
Progressive Experimental Endocarditis Lenta. W. J. MacNeal, Martha Jane Spence and Alice E. Slavkin.—p. 95.
Acute Generalized Miliary Tuberculosis. O. Auerbach.—p. 121.
Congenital Absence of Pericardium: Report of Case. E. K. F. Ronka and C. F. Tessmer.—p. 137.
Carcinoid Tumor of Cecum with Metastasis. E. B. Potter and J. M. Docter.—p. 143.
Ceroid, Pigment of Dietary Cirrhosis of Rats: Its Characteristics and Its Differentiation from Hemofuscin. K. M. Endicott and R. D. Lillie.—p. 149.
Further Studies on Preglomerular Cellular Apparatus. C. Oberling.—p. 155.
Generalized Vaccinia with Dual Virus Infection: Case Report. O. J. Wollenman Jr.—p. 173.
Observations on Structure of Bone in Estrogen-Treated Cocks and Drakes. W. Landauer and B. Zondek.—p. 179.
Experimental Studies in Cardiovascular Pathology: VIII. Late Vascular Reactions of Histamine Shock in Dogs. W. C. Hueper and C. T. Ichniowski.—p. 211.

Annals of Surgery, Philadelphia

119:161-288 (Feb.) 1944

- Report of Management of Burns Using Occlusive Compression Dressing, with Sulfathiazole Emulsion. D. Ackman, J. W. Gerrie, J. E. Pritchard and E. S. Mills.—p. 161.
*Refrigeration Anesthesia in Surgery. V. Richards.—p. 178.
Regeneration of Pre- and Postganglionic Fibers Following Sympathectomy of Upper Extremity: Experimental Study. H. D. Kirgis and E. A. Ohler.—p. 201.
*Total Pancreatectomy for Hyperinsulinism Due to an Islet Cell Adenoma: Survival and Cure at Sixteen Months After Operation; Presentation of Metabolic Studies. J. T. Priestley, M. W. Comfort and J. Radcliffe Jr.—p. 211.
Total Gastrectomy, Splenectomy, Resection of Left Lobe of Liver, Omentumectomy and Colectomy on One Patient in One Operation. F. H. Lahey.—p. 222.
Experiment in Early Diagnosis of Gastric Carcinoma. F. B. St. John, P. C. Swenson and H. D. Harvey.—p. 225.
Frequency and Future of Gallstones Believed to Be Quiescent or Symptomless. E. D. Truesdell.—p. 232.
Preoperative Measures Used in War Surgery in China: with Special Reference to Delimiting Tourniquet. P. E. Adolph.—p. 246.
Cystomyoma of Seminal Vesicle. A. Plaut and S. Standard.—p. 253.
Teratoma of Testicle: Metastasis to Epigastrium Treated by Bilateral Orchiectomy—Recovery. E. R. Saleeby.—p. 262.
Compound Fracture of Fingers. C. H. Smith.—p. 266.
Regional Enteritis Involving Meckel's Diverticulum: Perforation of Diverticulum and Fistula Formation. R. C. Horn Jr. and J. E. Rhoads.—p. 274.

Refrigeration Anesthesia in Surgery.—Richards reports 2 unusual experiences with refrigeration of limbs. In the first case refrigeration of a limb, the seat of an unsuccessfully removed arterial embolus, was not gratifying. Although cooling of the anoxic limb had retarded the metabolic needs of the tissues and prevented gross necrotic changes, it had not prevented gangrene, it caused the available collateral blood vessels to contract and it had retarded both the stimulus for and the rate of growth of new collateral channels. In the second case the limb was refrigerated and then allowed to return slowly to room temperature. The author is inclined to doubt that refrigeration anesthesia may be used successfully in lengthy reconstruction operations on normal limbs. This skepticism would apply equally to the débridement and preservation of traumatized extremities. Once a tourniquet is applied to a limb, even though the tissues distal to the tourniquet should be cooled, irreversible changes in the specialized nerve and muscular tissues are apt to occur unless the well established principles governing the use of a tourniquet are observed. Many of the advocated advantages of refrigeration seem untenable. Bacterial growth is retarded by refrigeration, but so also is the tissue response to inflammation, and on release of the cooling the inflammatory reaction may even be aggravated. In an injured extremity with an intact blood supply the application of a tourniquet is extremely hazardous, for it increases immeasurably the subsequent shock by adding to trauma the effects of tissue asphyxia. Care must still be exercised to avoid prolonged application of the tourniquet if the part is to be preserved, for, although gross necrosis and postmortem changes in the asphyxiated tissues will not occur, the highly specialized nerve and muscular tissues in the limb may be irreparably damaged by ischemic fibrosis. The same objection to refrigeration anesthesia may be voiced against its use in extensive reconstructive operations on an extremity. Similar objections obtain in the presence of vascular occlusion of an extremity. Refrigeration anesthesia has decided advantages in the control of shock, hemorrhage and infection if sacrifice of the limb has been decided on. This has been demonstrated in elderly, debilitated patients toxic from gangrene or infection in a limb.

Total Pancreatectomy for Islet Cell Adenoma.—Priestley and his associates report a case of hypoglycemia due to hyperinsulinism from a small adenoma of the islets of Langerhans in which a total one stage pancreatectomy was performed. A less radical procedure would have failed to cure the patient, a woman aged 49, since the adenoma was located in the head of the gland in intimate proximity to the duodenum. The authors believe that this is the first case of a total pancreatectomy for benign or malignant disease in which survival has extended beyond the immediate postoperative period. Total pancreatectomy was followed by a relatively mild degree of diabetes. Disturbance of carbohydrate digestion was not detected by the methods used, while digestion of protein and

fat was definitely diminished. From 35 to 70 per cent of ingested fat and 25 to 55 per cent of ingested nitrogen could be accounted for in the feces. A positive nitrogen balance occurred in spite of the large loss of nitrogen in the feces. Foodstuffs in the urine and feces accounted for 21 to 34 per cent of the calories ingested. The percentage of total fat in the stools as neutral fat varied from 54 to 69. The dried weight of the stools was greater than values obtained for healthy persons. The patient has remained in excellent health sixteen months after the operation. Evidence of deficiency of lipocaiic has not developed.

Bulletin of Johns Hopkins Hospital, Baltimore

74:1-84 (Jan.) 1944

- Peculiar Type of Adrenal Cortical Damage Associated with Acute Infections and Its Possible Relation to Circulatory Collapse. A. R. Rich.—p. 1.
- *Sudden Death in Young Adults in Association with Fatty Liver. R. L. Graham.—p. 16.
- *An Intradermal Test for Recognition of Hypersensitivity to Sulfonamide Drugs. W. B. Leftwich.—p. 26.
- Influence of Monocytosis of Peripheral Blood Stream on Cellular Character of Acute Inflammation. J. B. Frierichs.—p. 49.
- Influence of Certain Amino Acids on Histamine Reactions and Anaphylactic Reactions, in Intestinal Strips of Guinea Pigs and in Intact Guinea Pigs. S. W. Landau and L. N. Gay.—p. 55.

Sudden Death and Fatty Liver in Young Adults.—

Graham calls attention to a form of sudden death about which little is known. It occurs in relatively young adults in whom necropsy does not reveal a significant pathologic lesion except a large diffusely fatty liver. Almost invariably a history of chronic alcoholism is obtained, but the history supported by chemical analysis shows also that at the time of death the victim usually had not been drinking. Death usually results with extreme rapidity and with little or no warning. A total of 11 cases, all occurring within the past year, are reported. Five of these are given in some detail and form the basis of this paper. In these the sole pathologic lesion found post mortem was a diffusely fatty liver. Six similar cases are briefly reported. In each of these, however, some additional lesion was present at necropsy which might be regarded as the cause or a main contributing cause of death. The ages of the first 5 patients ranged from 27 to 40 years, the average being 34.2 years. None of the deaths occurred during the summer, which would rule out heat stroke. Four cases closely resembled coronary death, yet the most careful search showed no demonstrable heart lesion. The cases associated with convulsive seizures might conceivably be compared to another so-called liver death, namely eclampsia. What relation, if any, there might exist between the two is unknown. No known reason for the cause of death has been ascertained, but it is suggested that a vitamin deficient state, with or without hypoglycemia, might be responsible.

Intradermal Test for Hypersensitivity to Sulfonamides.—Leftwich says that there is much clinical evidence that hypersensitivity to the sulfonamides is a true allergic reaction similar to serum sickness. Most attempts to demonstrate sensitivity to the sulfonamides by means of skin tests have failed. The present investigation is a study of 76 patients seen at Johns Hopkins Hospital, 38 of whom were thought to be clinically hypersensitive to various sulfonamide drugs, and 38 of whom were not thought hypersensitive and served as controls. The author describes a method by which positive skin tests may be obtained in patients who have shown hypersensitive reactions to the sulfonamide drugs. The material used for the skin test consisted of serum obtained from patients who were receiving a sulfonamide therapeutically and contained a drug level of from 2 to 25 mg. per hundred cubic centimeters. This skin test is simple to perform and easily interpreted and was found reliable in the diagnosis of drug sensitivity in 28 out of 30 cases of drug reactions. It is hoped that the test may be useful both in the differential diagnosis of drug reactions and perhaps as a precautionary measure before starting sulfonamide therapy of patients who have previously received one of these compounds. The fact that positive skin tests may be so consistently obtained in sensitive persons is additional evidence that drug sensitivity is an allergic reaction. The sensitizing antigen may be a sulfonamide plasma protein combination which occurs in vivo in the circulating blood of

patients during sulfonamide therapy, the sulfonamide perhaps acting as haptene. The failure of 2 patients in this series, who developed hepatitis, and 1 patient, who developed hemolytic anemia as a result of sulfonamide therapy, to show positive skin reactions for the homologous sulfonamide supports the belief that the latter reactions are due to direct toxic action of the sulfonamide rather than to hypersensitivity.

Hawaii Medical Journal, Honolulu

3:1-56 (Sept.-Oct.) 1943

- Preventive Psychiatry in Relation to Territorial Hospital: Analysis of Etiologic Factors in 538 Admissions. Dec. 7, 1940-Dec. 6, 1942. R. D. Kepner.—p. 7.
- Honolulu Emergency Poliomyelitis Hospital. S. M. Wishik.—p. 17.
- Observations on Poliomyelitis in Honolulu and on Mainland. S. F. Stewart.—p. 21.

3:57-108 (Nov.-Dec.) 1943

- Sexual Sterilization: Physician's Obligation to His Patient. H. E. Bowles.—p. 65.
- Multilocular Pseudomucinous Cystadenoma of Pancreas: Report of Case Successfully Extirpated with Discussion of Its Surgical Treatment. S. Yamauchi.—p. 67.
- Heart Disease in Hawaii: Review of 160 Consecutive Cardiac Cases Seen in General Medical Clinic in Honolulu. A. S. Hartwell and J. W. Lam.—p. 71.

Journal Industrial Hygiene & Toxicology, Baltimore

26:1-36 (Jan.) 1944

- Study of Pneumonia in Shipbuilding Industry: Epidemiology and Management of 864 Cases Over One Year Period in Kaiser Richmond Shipyards. M. F. Collen, G. L. Dybdahl and G. F. O'Brien.—p. 1.
- Toxicology of Dichloromethane (Methylene Chloride): I. Studies on Effects of Daily Inhalation. L. A. Heppel, P. A. Neal, T. L. Perrin, M. L. Orr and V. T. Porterfield.—p. 8.
- Id.: II. Effect on Running Activity in Male Rat. L. A. Heppel and P. A. Neal.—p. 17.
- Possible Toxicity of Lead Alloys: III. Experiments on Rat with Lead-Tin-Antimony Solder. K. Salomon and G. R. Cowgill.—p. 22.
- Experimental Ammonia Gas Poisoning in Rabbits and Cats. E. M. Boyd, M. L. MacLachlan and W. F. Perry.—p. 29.
- Unusual Case of Trinitrotoluene (TNT) Poisoning. W. D. McNally.—p. 35.

26:37-44 (Feb.) 1944

- *Chronic Toxicity of Moderate Concentrations of Benzene and of Mixtures of Benzene and Its Homologues for Rats and Dogs. J. L. Svirbely, R. C. Dunn and W. F. von Oettingen.—p. 37.
- Toxicity of Lead Chromate. G. C. Harrold, S. F. Meek, G. R. Collins and T. F. Markell.—p. 47.
- Diabetes and Injury. W. A. Bishop.—p. 55.
- Quantitative Determination of Cyanide in Air. D. Lester.—p. 61.
- Filarograph: Recording Device to Facilitate Filar Micrometry. E. D. Palmes.—p. 64.

Toxicity of Benzene and of Mixtures of Benzene.—

According to Svirbely and his associates the homologues of benzene, chiefly toluene and xylene, have a greater effect on the nervous system but are less injurious to the blood-forming organs than benzene. Recently several mixtures consisting essentially of benzene and toluene have been advocated as substitutes for toluene. It was claimed that with these mixtures the chronic toxicity of benzene was attenuated to such an extent that chronic benzene poisoning was not likely. To check the validity of these claims, an investigation of two such blends was undertaken. The solvents studied were obtained from the manufacturer and consisted of benzene and two commercial blends designated as solvent X and solvent Y. Solvent X was a mixture of about 60 per cent benzene, 30 per cent toluene and 4 per cent xylene, while solvent Y contained from 50 to 60 per cent benzene, 35 per cent toluene and 4 per cent xylene. Both of these mixtures also contained varying percentages of other hydrocarbons. The experiments were made on rats, dogs and monkeys. The benzene as well as the solvents were vaporized. The concentrations inside the chambers were checked at hourly intervals, and the drop rate was adjusted to maintain the concentration of 1,000 parts per million. The exposure period was limited to seven hours daily for five consecutive days a week for twenty-eight weeks. Animals exposed to benzene seemed to present the same blood picture as those exposed to solvents X and Y. The most characteristic features were a relative lymphopenia followed by leukocytosis and lymphocytosis. The differential count indicated changes in the neutrophils and lymphocytes only. No severe anemia was noted. No definite changes were found in the blood picture

of dogs, but the urine tests indicated absorption and elimination of benzene and toluene. The urinary sulfate and hippuric acid excretion in the dogs depended on the benzene and toluene content of the solvents. The spleens of many of the rats exposed showed some evidence of toxic effects—hemosiderosis, small lymphoid follicles and narrowing of the perifollicular collars of closely packed, pale cells. Minor differences in the degree of change were noted in the case of each solvent. Significant pathologic changes were not noted in dogs exposed to the solvents.

Maine Medical Association Journal, Portland

35:1-22 (Jan) 1944

Social Obligation of Physician E. E. Holt Jr.—p. 1.
Prepaid Medical and Surgical Care J. C. McCann—p. 5.

35:23-40 (Feb) 1944

S 1161. E. W. Gehring—p. 23.
Dietary Inadequacies in Rural Maine H. E. Lawrence—p. 26.
Prevention of Vitamin Deficiencies in Wartime I. R. Stenzel—p. 31.

Minnesota Medicine, St. Paul

27:81-160 (Feb.) 1944

Use of Sulfonamides in Abdominal Surgery. C. E. Rea—p. 99.
Use of Dicumarol in Surgery. N. W. Barker—p. 102.
Use of Blood and Blood Substitutes in Surgery. M. G. Gillespie and J. F. Blumgren—p. 106.
Dührsen's Incisions D. E. Morehead—p. 109.
Management of Compound Hand Injuries R. F. Mueller—p. 110.
Involvement of Heart in Tularemia: Report of 2 Cases G. N. Angard—p. 115.
Caesarian Sections. Ten Year Statistical and Comparative Study from Ancker Hospital H. D. McGee—p. 117.
Five Year Survey of Caesarian Sections in Ramsey County, Minn. A. Skinner—p. 124.

New England Journal of Medicine, Boston

230:95-124 (Jan. 27) 1944

*Pathology, Clinical Manifestations and Treatment of Lesions of Intervertebral Disks. A. Oppenheimer—p. 95.
Parenterally Administered Amino Acids as Source of Protein in Man. S. H. Bassett, R. R. Woods, F. W. Shull and S. C. Madden—p. 106.
Syphilis G. M. Crawford—p. 109.

Lesions of Intervertebral Disks.—According to Oppenheimer, lesions of the intervertebral disks are about twice as common as is duodenal ulcer. This high incidence may be explained by the evolution of the human spine. The vertebral column of man does not differ essentially from that of many quadrupeds. This means that a system of bones and joints that was originally adapted to bear almost no vertical stress sustains in man the whole impact of the upright posture and locomotion. In some persons the vertebral bone is less resistant to strain than are the disks, but in a majority of adults the disk cartilages are the weakest parts of the spine. Wear and tear cause numerous minimal injuries. Cartilage undergoes degeneration with increase of fibrous tissue. The result is loss of turgor and volume of the disk. The same changes may be caused by a single severe injury and by diseases of the adjacent vertebral bodies. Rupture of disks is one of the injuries which may be followed by degeneration. Flattening of disks leads to narrowing of the corresponding intervertebral spaces, associated with displacement of articular processes, narrowing of the neural foramen and abnormal contact between vertebral bodies. The clinical manifestations depend on these secondary alterations rather than on the degree of disk thinning. Narrowing of the neural foramen may cause radicular neuritis. The predominance of symptoms experienced in radicular distribution in the periphery over symptoms felt in the spine itself is perhaps due to the fact that the disk, being devoid of nerves, does not hurt when diseased. The most sensitive parts in its neighborhood are the nerve roots and the apophysial joints. Arthritis of these joints develops in about 20 per cent of the cases of disk lesions and produces pain in the back with limitation of vertebral motion. In the majority of cases, however, the apophysial joints remain intact. This means that in most cases lesions of disks cause symptoms felt in the limbs without symptoms felt in the back or neck. The signs and symptoms of radicular neuralgia and neuritis are often indistinguishable from those of myalgia, peripheral arthritis, bursitis and pain referred from diseased viscera. Moreover, in the age group in which the incidence of

disk lesions is highest, involvement of joints, bursas and viscera is also common. Treatment may be surgical or conservative. Surgical removal of a ruptured disk followed by spinal fusion does not always prevent symptoms from developing after several years. Conservative treatment yields satisfactory results in about 75 per cent of the cases.

Oklahoma State Medical Assn. Jour., Oklahoma City

37:1-46 (Jan) 1944

Some Observations Relative to Surgery of Thyroid H. M. McClure—p. 1.
Dermatomycosis J. H. Lamb—p. 5.
Cancer of Breast G. E. Stanbro—p. 10.
Child in War Time Local Health Program G. L. Brooks—p. 14.
Rh Factor Its Relation to Erythroblastosis Foetalis and Transfusion Accidents D. J. Underwood—p. 17.

37:47-92 (Feb) 1944

Fractional X-Ray Treatment of Skin Cancer M. O. Nelson—p. 47.
Examination of Foodhandlers—Findings in City of McAlester, Okla. P. T. Powell and H. Lowens—p. 50.
Unusual Aspects of Coronary Thrombosis H. A. Ruprecht—p. 53.
Spontaneous Gastrocolic Fistula: Report of 2 Cases. P. E. Russo—p. 55.
Hyperventilation Syndrome R. C. Kirk—p. 59.

Public Health Reports, Washington, D. C.

59:65-96 (Jan. 21) 1944

Illness from Cancer in the United States. IV. Illness from Cancer of Specific Sites Classified in Broad Groups. V. Illness from Cancer of Individual Specific Sites H. F. Dorn—p. 65.
Cultivation of Pasteurella Tularensis in Liquid Medium E. A. Steinhilber, R. R. Parker and M. T. McKee—p. 78.

59:97-136 (Jan. 28) 1944

Illness from Cancer in the United States: VI. Regional Differences in Illness from Cancer. H. F. Dorn—p. 97.

Radiology, Syracuse, N. Y.

42:107-212 (Feb.) 1944

*Roentgen Therapy of Wilms Tumor E. W. Rowe and M. D. Frazer—p. 107.
Urinary Tract Changes with Benign Pelvic Tumors G. W. Chamberlin and F. L. Payne—p. 117.
Interoenteric Intussusception C. A. Good—p. 122.
Dyschezia and Megacolon. A. Hurst—p. 128.
Roentgen Study of Fetus in Utero. Some Practical Considerations W. Snow and M. Nadel—p. 136.
Spondylolisthesis: General Consideration, with Emphasis on Radiologic Aspects A. C. Galluccio—p. 143.
Castration in Malignant and Nonmalignant Disease. B. H. Orndoff—p. 159.
Use of Basal Metabolic Rate in Management of Radiotherapy for Leukemia E. M. Uhlmann and M. Goldner—p. 165.
Inhalation Pneumonia from Nitric Fumes M. R. Camel and H. S. Berkan—p. 175.
Peyronie's Disease, or Plastic Induration of Penis A. Soland—p. 183.
Technic for Optic Foramen Roentgenography B. S. Epstein and M. Kulick—p. 186.

Roentgen Therapy of Wilms Tumor.—According to Rowe and Frazer Wilms tumor, adenomyosarcoma, or embryonal mixed tumor of the kidney, is the most common renal neoplasm occurring in infancy and childhood. The patient is usually a child averaging 3 to 5 years of age, fairly well nourished and in apparent good health. A mass is found in either flank. It is of varying size, smooth contour and firm consistency and moves on deep inspiration. As metastases from Wilms tumor are generally blood borne, care should be taken not to palpate the tumor more than is absolutely necessary. Complete radiographic and urologic examination of the urinary tract is indicated. Biopsy is to be condemned because of the danger of spreading this anaplastic growth. Diagnosis should be based on the clinical history, physical examination and roentgenographic study. The author presents the histories of 4 children between 3 and 8 years of age with renal tumors. One of the children was treated by surgery and postoperative irradiation and the other 3 by preoperative irradiation, surgery and postoperative irradiation. The first patient died within five months. The remaining 3 show respectively a survival of four years and nine months; two years, and seven months. Combined preoperative irradiation, surgery and postoperative irradiation offer the most satisfactory method of treatment in these cases.

Book Notices

Internal Medicine in General Practice By Robert Pratt McCombs, Lieutenant Medical Corps United States Naval Reserve Cloth Price \$7 Pp 194 with 114 illustrations Philadelphia & London W B Saunders Company, 1943

The author has attempted to combine in a comparatively limited space a compendium of internal medicine with a certain amount of clinical physiology, especially as it applies to the constantly increasing number of clinical and laboratory tests which play such an important role in modern diagnosis. The book contains numerous illustrations, some of them in colors and all of high quality. This book should be most useful to the busy general practitioner. In the opinion of the reviewer it is the best compendium on internal medicine which has appeared in recent years. In the diagnosis of diseases the author departs from the usual procedure of merely mentioning the various laboratory tests, these diagnostic procedures are described and interpreted in simple language which can readily be understood by the average physician. The author apologizes for the absence of a bibliography. However, a brief list of references is so essential to the modern student that perhaps the author will relent in his next edition and add a short bibliography to each chapter.

Physical Biochemistry By Henry B Bull Ph.D. Associate Professor of Physiological Chemistry, Medical School of Northwestern University Chicago Cloth Price \$3.75 Pp 347, with illustrations New York John Wiley & Sons, Inc., 1943

Many of the important advances in biochemistry made in the last quarter of a century have resulted from the application of physicochemical methods to the study of biochemical problems. For the serious student and worker in this field, a thorough knowledge and understanding of modern physical chemistry is essential. This implies not only a knowledge of chemistry, including biochemistry, but also a working knowledge of mathematics and physics. Lacking such a preparation in the fundamentals of the science, the average student of biology or medicine may nevertheless gather much information of interest and value from books like this one by Bull. The author discusses many of the recent applications of physicochemical methods to the study of biologic problems, although in most cases the treatment is much too brief to permit a student with no previous experience in this field to gain a real understanding of it. As indicated by the author, the book must be supplemented by a "generous amount of outside reading" before the student can hope to get a real insight into the complex relationships between physical chemistry and biology. In spite of the fact that this book does not take the place of a more comprehensive treatment of this subject, it serves a useful purpose because it directs the attention of the student to this important and fruitful borderline between physical chemistry and the biologic sciences.

Baby Doctor By Isaac A Abt M.D. Cloth Price \$2.50 Pp 310 with portrait New York & London Whittlesey House McGraw Hill Book Company Inc., 1944

In telling his own story Dr Abt tells also about the rise of pediatrics, for he was a pioneer leader in the development of pediatric science and practice. Special attention is directed to the realism of his descriptions of medical practice in Chicago at about the turn of the century, particularly with respect to children's diseases. He describes intimately the gradual improvements then beginning in pediatric teaching and hospital facilities as well as in practice and nursing. Abt's autobiography gives a realistic insight into the wonderful advances in the medical care of children with which he has had so much to do. The book is a simple but pleasant record, with humorous touches and characteristic anecdotes of a great lifework by a kindly, modest, learned and able clinician.

Protección de la infancia en el Perú Por Urbano Valenzuela HERNANDEZ Paper Pp 77 Lima Peru 1942

In the first part this monograph deals with infantile mortality in Peru and factors which contribute to it in the second part with what is done today and what is planned for the future control of it. The monograph is a publication to be remembered by the students of problems of public health in Latin America.

Medical Aspects of Aviation (Speed and Acceleration) By Capt Ernst Tokl M.D. Cloth Price 10s 6d Pp 104 with 122 illustrations by F Ullman Art Editor The Forum Johannesburg London Sir Isaac Pitman & Sons Ltd, 1943

This booklet is devoted to the effects of speed and acceleration on aviators. It describes with the aid of many illustrations and diagrams the physiologic results of dive bombing, sharp turns and tight spirals. A few pages are devoted to crash injuries and the methods of preventing or ameliorating such injuries in minor crashes. Most but not all, of the material has been discussed in the standard works on aviation medicine. This small publication will not take the place of larger textbooks, but it does present one aspect of the subject in an entertaining manner.

The book is written in a popular style. Most of the illustrations are appropriate, some entirely superfluous. Tokl does not refer to a similar publication of his entitled *Aviation Medicine*, Cape Town, Unie-Volkspers Beperk, 1942, 213 pages. The author is best known for his book on *The Medical Aspect of Boxing*, Pretoria, J L Van Schaik, Ltd, 1941.

A Textbook of Biochemistry for Students of Medicine and Science By A T Cameron M.A. D.Sc., F.I.C. Professor of Biochemistry Faculty of Medicine, University of Manitoba Winnipeg Sixth edition Cloth Price \$4 Pp 376, with 28 illustrations New York Macmillan Company 1942

The subject of biochemistry is advancing so rapidly that some chapters of practically all books are out of date by the time they are published. For this reason any new book which serves to give the reader an accurate picture of the major changes taking place in biochemistry is useful. In the present edition, which is the sixth since the book was first published, in 1928, a number of alterations have had to be made in practically every chapter. This is especially true of those sections dealing with vitamins, diet, intracellular respiration, intermediary metabolism, nucleic acids, creatine formation and viruses. Although the book is too brief to be used as a general textbook of biochemistry for medical students, it will be found useful by readers who are interested in reviewing the subject and in keeping abreast of the rapid changes in this important field. The paper used in this book, which was printed in Great Britain, is very poor and reflects the changes produced by the war in that country.

Language and Thought in Schizophrenia Collected Papers Presented at the Meeting of the American Psychiatric Association, May 12, 1939, Chicago, Illinois and Brought up to Date Edited by J S Kasanin, M.D. Director Department of Psychiatry Mount Zion Hospital San Francisco With a preface by Nolan D C Lewis M.D. Professor of Psychiatry, Columbia University Medical School New York Cloth Price \$2 Pp 133 Berkeley & Los Angeles University of California Press 1944

This little monograph represents a collection of original contributions to the subject of language and thought in schizophrenia as presented at a meeting of the American Psychiatric Association in Chicago, May 12, 1939. The book contains an introduction and comments on each paper presented by Dr Jacob Kasanin and a preface by Dr Nolan Lewis. The contributors are all well known investigators in the field and include Drs Harry Stack Sullivan, Kurt Goldstein, Norman Cameron, John D Benjamin, E von Domarus and Andras Angyal and S J Beck, Ph.D. The book is intended for advanced students in psychobiology, particularly those who are especially interested in schizophrenia. As such it is highly recommended and is the first correlated and certainly the best contribution to the subject since the classic work of Storch, which was published more than twenty years ago.

El pulso venoso normal Por Agustín Castro Tests de doctorado en medicina Universidad nacional de Córdoba Facultad de ciencias medicas Instituto de fisiologia I y II Pp 148 with 77 illustrations Buenos Aires Sebastian de Amorruut e Hijo 1942

In this study the author has certainly gone beyond what is usually read in a thesis for a degree of doctor in medicine. The author has made a systematic and thorough analysis of the subject and has added numerous personal observations. He carried out his work at the Institute of Physiology of Córdoba under the guidance of Dr Orris who, together with Dr Braun Menendez is the author of a treatise on heart diseases recently translated into English by the Oxford University Press.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

IMPOTENCE AND ADMINISTRATION OF ENDOCRINES

To the Editor:—When impotence is improved by glandular therapy, which will give the more intense or prolonged results, testosterone or the gonadotropic hormones? Of the two types of gonadotropic substances, which gives better results, the true anterior pituitary gonadotropic hormone or the "pituitary-like" substances? My questions are prompted by the following case: A man aged 40 came to me about a year ago complaining of impotence. Desire was normal, but erections were weak and occasionally absent. Intercourse was attempted about twice weekly. Various female partners gave the same results. Sexual rest, advice, and tonics gave no results. Thorough check-up, including over a period of time basal metabolism, urine analysis, blood counts, Wassermann tests and cystoscopy, revealed nothing abnormal. He had not masturbated in years, practiced withdrawal or used a condom. After all this, and because his penis and testes seemed smaller than average for his stature, I concluded that there was a neurosis, based probably on hypogonadism. He did not have the characteristics of the Froelich syndrome. He agreed to a course of testosterone injections. These were given three times a week (10 mg. ampules). Results were almost perfect, and the patient was so pleased that we repeated the series (a box of 50 ampules) several times last year. The penis became larger and erections good. I am now in the Army, and the patient is being treated by another physician with equally good results from the injections, but now the financial factor is entering into the problem. His doctor writes me asking whether, dollar for dollar, the gonadotropic substances will do what the testosterone is now doing or better, and if a combination of the two would not be better regardless of cost. Testosterone is too expensive now.

Captain, M. C., A. U. S.

ANSWER:—Usually, treatment of impotence by endocrine material is highly unsatisfactory unless the impotence is incidental to hypofunction of the testicles. Most impotence appears to be psychogenic and not distinctly susceptible to endocrine therapy. Gonadotropic substances stimulate testicular function to a variable degree. It appears that chorionic gonadotropin is the most potent of the three types, judging by the response of the interstitial tissue and by the descent of cryptorchid testes. It is difficult to make such comparison with accuracy, because the biologic units for comparison are not interchangeable between chorionic, equine and genuinely pituitary gonadotropins.

If the patient involved in a given decision is essentially an example of adiposogenital dystrophy or of hypofunction of the genitalia without obesity, it may be preferable to use gonadotropic therapy in order to achieve development of testicles as well as of the other genitalia. If no response occurs, testosterone propionate by injection or methyltestosterone orally may be used as substitutions for the function of the interstitial cells. This will not stimulate testicular function but will stimulate the other genital developments and functions to a considerable extent. The latter type of therapy is especially successful in climacteric cases, and there are some aspects of the case cited in the inquiry suggesting the climacteric rather than inadequate development.

The relative cost of the two types of treatment would have to be decided by trials in a given patient. It should be pointed out, however, that it is probably not worth while economically or socially to attempt such vigorous stimulation of this individual as is implied by the promiscuity referred to. The goal of treatment of patients with the climacteric is preferably autonomic and psychologic comfort rather than restoration of potency.

UNILATERAL CEREBRAL LESION

To the Editor:—Several weeks following an apparent tonsillitis at which time sulfadiazine 3¼ gr. every four hours was administered for three days, with recovery, and immediately following a superficial abrasion of the right knee, a three year old girl was noticed to limp. I was consulted about two weeks later when the limp noticed by the mother did not improve and she also noticed a weakness in the right hand. The child ate exclusively with the left hand and a glass of water in the right hand would fall from the child's grasp. There has been some progression of symptoms over the past six weeks. The following physical findings are reported: a definite spastic hemiplegia on the right, a slight shortening of the Achilles tendon and absence of the right abdominal reflexes. The plantar reflex on the right was extensor. The eye grounds were entirely negative. Urinalysis was negative. Hemoglobin was 11.7 grams and the white blood count was 10,200. A flocculation test for syphilis was negative. X-rays of the head, chest, right hip and tuberculin test were negative. There have been no headaches as far as can be determined and the child plays and appears happy and to have no complaints.

M.D., Ill.

ANSWER:—The patient probably has a left sided cerebral lesion, according to the submitted facts. The cause of this lesion is either inflammatory or vascular. In all probability the pathologic condition is that of cephalomalacia (cerebral softening) due to an endarteritis and finally thrombosis or a

perivascular lesion due to an encephalitis. The treatment is essentially symptomatic. If there is any evidence of cardiac involvement the patient should have considerable rest. Potassium iodide (saturated solution) in doses of five drops three times daily may be given.

POSSIBLE CAUSES OF CRYING SPELLS

To the Editor:—An apparently healthy locomotive engineer aged 58 states that three times in one week he has had uncontrollable crying spells. I treated him three months ago for lobar pneumonia, and after his complete recovery he resumed work. No such disturbances were experienced previous to the pneumonia. Twice during his recovery he reported crying spells, but after a short time they disappeared. Yesterday he felt one coming on and left the group of men he was with and hid away and "cried like a baby." Today he experienced the same thing and I am asking help in making a diagnosis and establishing treatment. Would this be of endocrine origin?

Elmer W. Clark, M.D., Norton, Mass.

ANSWER:—The crying spells that are described may be a manifestation either of a psychiatric disorder or of a neurologic disease. These periods of crying may be the result of emotional problems which have produced anxiety and tension, manifestations of a psychoneurosis. A complete psychiatric study should be done to determine what, if any, emotional factors are concerned in the production of these symptoms. Another psychiatric disorder which may begin with symptoms of this type is arteriosclerotic brain disease, in which the vascular changes in the cerebral cortex produce a loss of inhibitory control with a resultant emotional instability. Usually a careful examination of the sensorium in such cases demonstrates disturbance in memory and a change in other intellectual functions. At times the psychiatric condition known as involutional melancholia will begin with crying spells, and it may be precipitated following a severe somatic illness. In such cases there will be a profound change in the general mood in the direction of depression. Many fears appear, particularly related to somatic function.

There is a neurologic syndrome resulting from lesions in the thalamocerebral pathways resulting in a condition known as forced crying or even forced laughing. The patient will suddenly exhibit unmotivated crying or laughing, without a concomitant subjective feeling of this emotional expression. Endocrine disorders are not commonly of etiologic importance in the condition described. However, in early hyperthyroidism it may be that emotional instability will result in crying spells.

A complete neurologic and psychiatric examination is necessary before establishing the diagnosis, and the treatment will then depend on which condition is present.

WATERY DISCHARGE FROM NIPPLE

To the Editor:—A woman of 67 has for more than a year noted a watery discharge from the left nipple. There is no deformity of the nipple nor palpable lump within the breast or in the axilla. The left breast seems a little bigger than the right; the patient is right handed. There is no other evidence of endocrine disturbance nor history of endocrine therapy. What chance is there that the process back of this discharge is an innocent one? How strongly should one insist on a biopsy? I shall probably have had the biopsy done before the inquiry is answered, for it is my impression that "more than a year" is a long time.

Nelson Morris, M.D., Toledo, Ohio.

ANSWER:—A watery discharge from the nipple of the breast is usually due to an intraductal papilloma, which may be malignant. These papillary growths, if not malignant, are potentially so. There is usually no localized tumor to indicate the location of the papilloma, and there may be multiple intraductal papillomas scattered throughout the lobules of the breast tissue. The surgical indication is that of simple mastectomy and, if the lesion proves to be malignant and infiltrating through the ducts, it should be treated by radical mastectomy.

HERPES ZOSTER AND ABSORPTION OF BISMUTH

To the Editor:—A woman aged 35 with a large chest wall abscess was treated by an injection of 2 ounces of bismuth paste, with considerable improvement. Several months later a purplish pigmentation was noted involving the tongue, palate and gums. This is now gradually fading. Is it reasonable to assume that these are cause and effect? More recently she developed herpes zoster. Might this be in any way related to the bismuth which still remains within her body?

Emil Rothstein, M.D., Rockville, Ind.

ANSWER:—It is most probable that the purplish pigmentation of the tongue, palate and gums was the result of the deposition of bismuth sulfide following the general absorption of significant quantities of bismuth from the site of the injection. Deposits of such extensive character are often associated with stomatitis and gingivitis, the latter tending to subside before disappearance of the coloration. Herpes zoster might well be related to such a stomatitis or gingivitis but otherwise has no likely connection with the absorption of bismuth.

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- American Heart Journal. St. Louis.
American Journal of Clinical Pathology. Baltimore.
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. Cincinnati.
American Journal of Orthodontics and Oral Surgery. St. Louis.
American Journal of Orthopsychiatry. New York.
American Journal of Pathology. Ann Arbor, Mich.
American Journal of Physiology. Baltimore.
American Journal of Psychiatry. New York.
American Journal of Public Health. New York.
American Journal of Roentgenol. and Radium Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonorr. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Review of Soviet Medicine. New York.
American Review of Tuberculosis. New York.
Anesthesiology. New York.
Annals of Allergy. Minneapolis.
Annals of Internal Medicine. Lancaster, Pa.
Annals of Otolaryngology, Rhinology and Laryngology. St. Louis.
Annals of Surgery. Philadelphia.
Archiv für Kinderheilkunde. Stuttgart.
Archiv für klinische Chirurgie. Berlin.
Archives of Dermatology and Syphilology. A. M. A., Chicago.
Archives of Disease in Childhood. London.
Archives de l'Institut Pasteur d'Algérie.
*Archives of Internal Medicine. A. M. A., Chicago.
*Archives of Neurology and Psychiatry. A. M. A., Chicago.
*Archives of Ophthalmology. A. M. A., Chicago.
*Archives of Otolaryngology. A. M. A., Chicago.
*Archives of Pathology. A. M. A., Chicago.
Archives of Physical Therapy. Chicago.
*Archives of Surgery. A. M. A., Chicago.
Archivos Americanos de Medicina. Buenos Aires.
Archivos argentinos de pediatria. Buenos Aires.
Archivos de Pediatria del Uruguay. Montevideo.
Arquivos de cirurgia clinica e experimental. São Paulo.
Australian Journal of Experimental Biology and Medical Science. Adelaide.
Beiträge zur klinischen Chirurgie. Berlin.
Brain. London.
British Heart Journal. London.
British Journal of Children's Diseases. Dorking, England.
British Journal of Dermatology and Syphilis. London.
British Journal of Experimental Pathology. London.
British Journal of Ophthalmology. London.
British Journal of Radiology. London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Journal of Venereal Diseases. London.
British Medical Journal. London.
Bulletin of the Johns Hopkins Hospital. Baltimore.
Bulletin of the Los Angeles Neurological Society.
Bulletin of the New York Academy of Medicine. New York.
Bulletin of the U. S. Army Medical Department. Washington, D. C.
California and Western Medicine. San Francisco.
Canadian Journal of Public Health. Toronto.
Canadian Medical Association Journal. Montreal.
Cancer Research. Baltimore.
Connecticut State Medical Journal. Hartford.
Delaware State Medical Journal. Wilmington.
Der deutsche Militärarzt. Berlin.
Deutsche medizinische Wochenschrift. Leipzig.
Deutsche Zeitschrift für Chirurgie. Berlin.
Diseases of Chest. Chicago.
Edinburgh Medical Journal.
Endocrinology. Springfield, Ill.
Experimental Medicine and Surgery. Brooklyn.
Gaceta Médica de Mexico. Mexico, D. F.
Gastroenterology. Baltimore.
Hawaii Medical Journal. Honolulu.
Helvetica medica acta. Basel.
Illinois Medical Journal. Chicago.
Indian Medical Gazette. Calcutta.
Irish Journal of Medical Science. Dublin.
Journal of Allergy. St. Louis.
Journal of the Arkansas Medical Society. Fort Smith.
Journal of Aviation Medicine. St. Paul.
Journal of Bacteriology. Baltimore.
Journal of Bone and Joint Surgery. Boston.
Journal of Clinical Endocrinology. Springfield, Ill.
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Journal of Infectious Diseases. Chicago.
Journal of International College of Surgeons. Chicago.
Journal of the Iowa State Medical Society. Des Moines.
Journal of the Kansas Medical Society. Topeka.
Journal of Laboratory and Clinical Medicine. St. Louis.
Journal-Lancet. Minneapolis.
Journal of the Maine Medical Association. Portland.
Journal of the Medical Association of the State of Alabama. Montgomery.
Journal of the Medical Association of Georgia. Atlanta.
Journal of the Medical Society of New Jersey. Trenton.
Journal of Mental Science. London.
Journal of the Michigan State Medical Society. Lansing.
Journal of the Missouri State Medical Association. St. Louis.
Journal of the Mount Sinai Hospital. New York.
Journal of the National Cancer Institute. Washington, D. C.
Journal of Nervous and Mental Disease. New York.
Journal of Neurology and Psychiatry. London.
Journal of Neuropathology and Experimental Neurology. Baltimore.
Journal of Neurophysiology. Springfield, Ill.
Journal of Nutrition. Philadelphia.
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Journal of the Oklahoma State Medical Association. Oklahoma City.
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Journal of Physiology. Cambridge.
Journal of Royal Army Medical Corps. London.
Journal of Royal Naval Medical Service. London.
Journal of the South Carolina Medical Association. Florence.
Journal of the Tennessee State Medical Association. Nashville.
Journal of Thoracic Surgery. St. Louis.
Journal of Urology. Baltimore.
Kentucky Medical Journal. Bowling Green.
Klinische Wochenschrift. Berlin.
Lancet. London.
Laryngoscope. St. Louis.
Medical Annals of the District of Columbia. Washington.
Medical Journal of Australia. Sydney.
Medicina. Buenos Aires.
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New England Journal of Medicine. Boston.
New Orleans Medical and Surgical Journal. New York.
New York State Journal of Medicine. New York.
North Carolina Medical Journal. Winston-Salem.
Northwest Medicine. Seattle.
Ohio State Medical Journal. Columbus.
Ophthalmologia Ibero Americana. Buenos Aires.

- Pennsylvania Medical Journal. Harrisburg.
 Physiological Reviews. Baltimore.
 Praxis. Bern.
 Prensa Médica Argentina. Buenos Aires.
 Psychiatric Quarterly. Utica, N. Y.
 Psychosomatic Medicine. Baltimore.
 Public Health Reports. Washington, D. C.
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 Revista Argentina de Cardiología. Buenos Aires.
 Revista Argentina de Neurología y Psiquiatría. Rosario.
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This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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Am.—American
A.—Association
Col.—College
Conf.—Conference
Cong.—Congress
Conv.—Convention
Dist.—District
Hosp.—Hospital
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Pharm.—Pharmaceutical
Phys.—Physicians
Rev.—Revision
Ry.—Railways
Soc.—Society
Surg.—Surgery
Surgeons
S.—Surgical
M.—Medical

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